NEEDS ASSESSMENT FOR A WESTERN RENEWABLE ENERGY GENERATION INFORMATION SYSTEM FINAL REPORT

CONSULTANT REPORT

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I. SUMMARY AND RECOMMENDATIONS

In June 2002, Western Governors adopted an amendment to the Western Governors' Association (WGA) resolution, *Western States' Energy Policy Roadmap*. The amendment expressed support for (1) "creation of an independent, regional generation tracking system to provide data necessary to substantiate the number of megawatt hours generated from renewable energy sources and support verification, tracking and trading of [renewable energy certificates] RECs;" and (2) "establishment of a single institution in the West that will issue, track and oversee REC trading."[1, 2]

Included in the resolution is a management directive charging WGA to bring Western stakeholders together to help define the institutional structure, design operating guidelines and identify information needed to support tracking and accounting of renewable energy generation and registration of RECs in the Western Interconnection.[3]

To provide guidance to this project, the WGA formed a Western Renewable Energy Generation Information System (WREGIS) working group (formerly known as the RETAC working group).

In the Spring of 2003, the WGA and the California Energy Commission (Energy Commission) began discussing working together to develop a western tracking system. The Energy Commission is legislatively required to develop a renewable energy tracking system to verify compliance with California's renewables portfolio standard (RPS), and for verifying retail product claims. The WGA and the Energy Commission recognized the benefits of working together on WREGIS and continue to work collaboratively.

In September 2003, the WGA, in conjunction with the Energy Commission, surveyed stakeholders regarding a regional tracking system. The purpose of this survey was to identify the specific REC tracking and verification needs of regulators, utilities, market participants, tribal organizations, developers and other stakeholders in the West. The survey was completed by a total of 96 respondents, representing a wide spectrum of stakeholders. A draft report was released on October 21, 2003 summarizing stakeholder responses to the survey with recommendations on the

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[1] Western Governors' Association, *Western States' Energy Policy Roadmap*, Policy Resolution 02-26, repeated and updated in Policy Resolution 03-19, September 15, 2003 at http://www.westgov.org/wga/policy/index.htm#Energy.

[2] This resolution does not bind states to reliance on RECs for compliance with renewable portfolio standards or other state programs. Those decisions will still be made by individual states for each program.

[3] The Western Interconnection encompasses 11 U.S. states, two Canadian provinces and parts of Northern Mexico: Alberta, Arizona, Baja California, British Columbia, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming.

basic functions and capabilities of the tracking system, which the WGA has named the WREGIS. The recommendations were presented for comment at six workshops in Phoenix, Sacramento, Denver, Santa Fe, Las Vegas and Portland. Approximately 135 people in total attended the workshops, and each workshop lasted approximately one half day. The workshops allowed ample opportunity for questions and comments on the recommendations.

This final report contains the revised recommendations on the basic functions and capabilities of the tracking system along with the original survey findings. These recommendations are based on written and verbal comments received at the workshops, on the results of the survey, the consulting team's own judgment and experience with other tracking systems in the U.S. and Europe, and guidance from the WGA and Energy Commission. Ultimately, this report is intended to be an initial attempt to define the scope of WREGIS. The authors fully expect that the scope of WREGIS will be further refined over the next few months as we define the operational rules, the institutional governance, costs and funding mechanisms, and the technical and data collection requirements to operate WREGIS.

The first part of the report contains general recommendations and then specific recommendations for WREGIS functional capabilities. Each specific recommendation is followed by a short statement that summarizes comments we received on the topic, and a brief discussion of how the recommendation was developed. The second part of the report contains the survey findings.

It is important to note that we received many more comments at the workshops and in writing than are presented in the body of this report. Comments were received on a variety of issues related to WREGIS data collection, operation and institutional governance, participation, funding and other issues too broad to include in this report. Any comments not presented in this report will be used to inform the next phase of the WREGIS development, which will define basic system operation and administration. All written comments from the six regional workshops have been compiled as a separate appendix to this report, and can be downloaded at: http://www.energy.ca.gov/portfolio/documents/2003-10-21_workshop/public_comments/

General Recommendations for WREGIS System Design and Functionality

In developing the recommendations for WREGIS system design, the Energy Commission and WGA relied upon a number of sources in addition to the workshops, the survey and the WGA policy resolution. The WREGIS (formerly RETAC) working group, and public input to the California Energy Commission's *Renewable Portfolio Standard: Decision on Phase 2 Implementation Issues*, offered

some guidance. The *Regulator's Handbook on Tradable Renewable Certificates*,[4] written by the Center for Resource Solutions with input from members of the National Association of Regulatory Utility Commissioners, also identified issues that have implications for the design of REC tracking systems. Finally, the Xenergy Consulting Team's experience with similar tracking systems either in existence or under development in the United States gave additional practical insight into tracking system design issues and options.

Based on the above sources and experiences, the authors followed these guiding principles in shaping their recommendations for WREGIS design and development:

1. The purpose of developing a WREGIS is to (1) provide data necessary to substantiate and support verification and tracking of renewable generation, and (2) to establish a single institution in the West to issue, track and facilitate the commercial trading of RECs (per the WGA Policy Resolution).

2. Careful planning is important to ensure that current needs are met while trying to anticipate future needs. It is much more cost-effective to fully represent current needs and have a place-holder for possible future needs than to build a system and then re-build it or significantly expand it later due to changes that could have been anticipated at the time of original system design.

3. The WREGIS development process is being guided by the recommendations of stakeholders who will be using the system.

4. For the purposes of this project, renewable energy is defined as all renewable technologies, fuels, and applications included in the definition of renewable energy adopted by any western state or province.

5. The WREGIS database should serve the public policy needs of regulators and state or provincial agencies responsible for carrying out programs related to renewable energy in the West, as long as such information (1) does not substantially increase the cost of designing and operating the WREGIS and (2) such data collection is feasible.

6. Data that are either required for compliance purposes or have a strong constituency among WREGIS stakeholders, but for which no acceptable data measuring or collection methodology presently exists, should be provided a placeholder data field in the software design specifications. These data fields will be activated once an acceptable methodology is developed and approved by the appropriate WREGIS entity.

[4] The decision is available on the California Energy Commission's website at www.energy.ca.gov/portfolio/documents/index.html

7. WREGIS should establish standards for the quality and verification of data that is put into the tracking system so the data in the system are uniformly accurate. These minimum standards should be developed as a part of the WREGIS Operating Rules.

8. The data contained in WREGIS should be accurate but only as precise as necessary to meet stated needs.

The system should be designed to allow markets to work efficiently, and to do the job it is designed to do as cost-effectively as possible. To be useful, the WREGIS must be credible, have technical integrity and incorporate as much flexibility as possible to remain relevant under changing market and regulatory conditions. To achieve these broad goals and to accommodate the circumstances in the West, a tracking and accounting system should reflect the following general functional characteristics:

1. *Voluntary.* Participation in the WREGIS will be voluntary, both at the state or provincial level and the market participant level. We anticipate however, that some states may require participation in WREGIS to demonstrate compliance with a particular state regulatory program.

2. *Flexibility.* WREGIS should have the ability to support a variety of public policies and voluntary renewable markets. Supporting a variety of needs helps spread the cost of system design and operation, assuming such flexibility does not increase system cost significantly.

3. *Policy-neutral.* As a general rule, WREGIS should be policy-neutral to the extent possible. It should be primarily an accounting system that issues certificates to generators, tracks certificate ownership, and retires certificates when they are used for compliance or to support marketing claims. Issues related to eligibility of RECs for a particular policy mandate will be left to state policy makers or regulators to manage at the individual state level.

4. *Volume.* WREGIS should offer sufficient value to participants so that it attracts many users. High system volume will help spread out operational costs, but more importantly, greater volume enables competitive markets and REC liquidity, which can lead to lower REC prices for end-users. Further, it fosters market credibility to the benefit of consumers and producers.

5. *Geographic Scope.* WREGIS will operate in the geographic region defined by the Western Electricity Coordinating Council (WECC). Since the WECC does not follow state boundaries, some states are split in half by the WECC boundaries. To the extent it is possible, WREGIS has a goal of allowing facilities to participate in WREGIS if they are located in the eastern portion of states that are straddled by the WECC boundaries.

6. *Low User Costs.* WREGIS is committed to providing REC tracking services at a reasonable cost. The level of user fees will be critical to participation by generators, wholesale suppliers, renewable marketers, utilities, and others.

7. *Market-neutral*. WREGIS must be credible to all users and observers. In order to maintain credibility, tracking and accounting will remain separate from market-making functions. The tracking system administrator will be independent of the market and not in a position to gain financially from the activity being monitored. Private companies can and do provide necessary market-making functions already, and the Energy Commission and WGA believe that such functions should be left to the market to provide.

Specific Recommendations for WREGIS Functional Capabilities

Based on the results of the stakeholder workshops, the Needs Assessment Survey and the Consulting Team's experience, we make the following recommendations on specific WREGIS functional capabilities, consistent with the general recommendations. In addition to summarizing the uses for which this system will be designed and the data needed to support those uses, we identify data fields that will require the development of measurement and collection methodologies in order to be implemented. We also identify data needs that require further information and study before an informed decision about their inclusion can be made.

State Policy and Program Needs

1) Recommendation: WREGIS will track only renewable energy certificates, and will not attempt to track non-renewable generation attributes.

Rationale: Although we received four comments supporting the tracking of non-renewable generation attributes, the core mandate by the Energy Commission is to develop a tracking system that will support the state's renewable Portfolio Standard (RPS). The WGA policy resolution is also specific to renewable certificate markets and tracking for such markets. In addition, we did not hear from state regulators in either the workshops or the comments submitted that non-renewable generator participation was needed or desired to support their specific regulatory programs. Finally, since the primary benefit in all-generation tracking systems accrues when the system has a complete picture of all generation, and since this is a voluntary system, and there is no single independent system operator (ISO) in the West or way for WREGIS to track all-generation in the WECC, significant costs would be associated with trying to design an all-generation tracking system for the WECC, but very few attainable benefits.

2) Recommendation: We recommend that the WREGIS system be designed to meet the following needs:

- Prevent double counting
- Verify the quantity of renewable energy generated in the Western Interconnection
- Issue and retire renewable energy certificates with unique serial numbers
- Track renewable transactions at the wholesale level
- Verify compliance with state RPS and other state renewable energy policies/programs
- Create reports about REC transactions for regulators and others
- Verify green power claims
- Accommodate commercial trading of RECs
- Track renewable electricity sales from other states into California

In addition, to the extent possible within budgetary and time constraints, the WREGIS system should be designed to be compatible with other REC tracking systems to facilitate imports and exports of RECs between WREGIS and other tracking systems.

Rationale: The functional capabilities listed represent the top eight functional capabilities that were selected in the survey. In addition, the ninth item, accommodating commercial trading of RECs was contained in the WGA policy resolution. Moreover, these findings were reinforced at the six stakeholder workshops. We did receive both written and verbal comments from a handful of stakeholders that in addition to these functional characteristics, WREGIS should expand its capabilities to include being able to produce environmental disclosure labels, support state climate change and emissions based environmental policies such as Environmental Portfolio Standards (EPS). We did not try to accommodate these functions specifically because, (1) tproducing environmental disclosure labels requires tracking all generation in a state or the WECC, and for reasons listed above, this is not feasible; (2) there are no western states that currently have EPS requirements; and (3) we did not receive a significant number of comments from state air regulators or energy regulators that they wanted WREGIS to be able to perform these functions.

Technologies to Be Included in WREGIS

3) Recommendation: WREGIS should issue certificates, maintain a database of information, and track wholesale transactions for *all metered renewable generation connected to the western grid*. It is a goal of the Energy Commission and WGA to include customer-sited grid-connected renewable generation systemsand WREGIS will support ongoing efforts to figure out how to include data from such systems in a uniform manner. However, inclusion of data from customer-sited systems will not be

a first tier priority. Instead we will focus on making WREGIS operational as soon as possible. Placeholders will be established so that data for customer-sited systems can be included in the future once an acceptable measurement and verification protocol is proposed.

In addition and to the extent possible, WREGIS intends to include only those non-generating, energy offsetting technologies that are eligible for a state regulatory program. This also will not be a first tier priority, but will be supported as an ongoing goal of WREGIS. WREGIS will not attempt to track the output from off-grid renewables except to the extent that they are eligible for one of the Western states' regulatory programs.

Rationale: While there was significant interest expressed in the inclusion of small-scale customer-sited systems, in both the written and verbal comments, there was also a recognition that (1) the timeline laid out by the Energy Commission for launching WREGIS is extremely aggressive and it might not be possible to resolve all issues in time for a January 1, 2005 launch date, (2) that there is a need for some uniformity between states in the generation measurement, collection and verification of small systems, and (3) there is not currently agreement on how such systems should be included. Further discussion and work is needed in this area. As a result, we recommend that a placeholder be included in the software design specifications for each of these system types until acceptable methodologies are identified and approved as meeting the WREGIS minimum operational standards. WREGIS will support the formation of a Special Needs Committee to develop and recommend appropriate measurement, collection and verification methodologies.

There is only minimal interest at present for non-grid connected renewables. For this reason, and because there could be significant costs associated with including data from non-grid connected renewables, we do not plan to include these systems except to the extent that they are eligible for one of the Western states' regulatory programs.

4) Recommendation: The definition of renewable generation should include <u>all</u> renewable technologies and fuel types named by any of the western states in their renewable energy definitions.

Rationale: States do not need to agree on a common definition of renewable energy sources for the WREGIS to function. Sufficient generator information will be included in the electronic record for each certificate so that certificate-buyers can determine eligibility for a particular state or program, if eligibility varies by program within a state. This is consistent with the general goal of being policy neutral.

Data Verification and Data Fields

Generation tracking systems typically track “static” information that only needs to be reported once (or in some cases updated infrequently), and “dynamic” information that is constantly variable. Static information generally includes information related to the characteristics of the generation facility such as technology type, ownership or location. Dynamic information is variable information that is associated with a specific MWH, such as the certificate serial number and date of generation.

Data Acquisition and Verification

One of the greatest challenges of designing and administering WREGIS is identifying how high quality data is presently collected and how it can be transferred into WREGIS when there is no central ISO or regional transmission operator (RTO) in the West controlling such data. The WGA and the Energy Commission will be establishing a Data Sub-Committee under the Operational Rules Committee to investigate some of the issues related to obtaining uniform quality generation data.

5) Recommendation: WREGIS will use self-reported information from generators to fill in the static fields. This information will be provided to WREGIS during an annual registration process and updated per our recommendation below. To the extent it is possible, WREGIS will use financial settlements data to fill in the dynamic fields. For very small or on-site systems, we are deferring data acquisition recommendations to the Special Needs Committee that will be working on all of the issues related to customer-sited systems.

Rationale: We received many comments related to this general topic in the workshops, the written comments and the survey. We received several comments from generators and utilities that they are already providing either their state or the Federal Energy Regulatory Commission (FERC) with much of the data needed for WREGIS. We also heard that they felt that having to submit such data twice would be burdensome. However, the FERC data is not made publicly available until over one year after the power has been generated, which would prevent WREGIS from issuing certificates in a timely manner. In addition, although some of this information is submitted to some state regulators, we found that no states are currently collecting all of the data that will be needed by WREGIS. We also heard from several states, that the regulatory agencies had extremely limited budgets and were unlikely to be able to support new administrative functions, such as collecting or verifying data. In order for generators to participate in WREGIS, they will need to provide information to establish an account in WREGIS, and we feel that adding a few additonal pieces of information to such forms would not be overly burdensome.

With regards to dynamic information, we received several comments that financial settlements data should be used. We agree with this in principle, although it is unclear whether WREGIS will have access to this data in a timely way. We will refer

this issue to the Data Sub-Committee for further research into how such data could be obtained easily for all generators.

6) Recommendation: All data contained in WREGIS will be verified. Because of the inherent limitations imposed by the ability to verify some information, this will necessarily limit the type of information that can be tracked by WREGIS. Initially, WREGIS will only include those data fields that it can verify and that would not significantly delay the start of the system. It will include placeholders for other pieces of data that it anticipates being able to verify in the future. Such fields will not become active until the verification methodology is in place.

Rationale: In the Draft Needs Assessment Report, we posed the question as to whether or not all data in WREGIS needs to be verified. We heard overwhelmingly in the workshops and written comments, that the reliability and credibility of data within WREGIS is important to the system success, defined as public, regulatory and market confidence in the accuracy of information recorded in the system. Verification was cited as a critical component of credibility.

7) Recommendation: All static information in the WREGIS database will meet the same level of verification. All dynamic information in the database will be of uniform accuracy and precision.

Rationale: For static information, data collection is not as much of an issue as data verification. We anticipate data verification will be fairly straightforward, since much of the information is filed with FERC and other agencies. Because of this, we recommend that a common approach be taken to verify generator information for static data fields.

For dynamic information, data collection is the key issue, and it is foreseeable that simply laying out a common approach for verifying the data could still result in varying levels of accuracy and precision in the data quality between states and among different sized systems. Mandating a single collection methodology may also not be practical given the lack of a central ISO in the West. Therefore, for dynamic data, we recommend that the data standards must result in uniform accuracy and precision of data throughout the system. This general principle was expressed numerous times in the written and verbal comments.

Static Data That Will Be Tracked in WREGIS

8) Recommendation: We recommend that the WREGIS include two general types of static data fields provided that the inclusion of both types of data fields does not significantly delay the launching of WREGIS. The two static data include those that are "mandatory fields" and must be filled in by all generators who participate in the system, and those that are "voluntary fields" where the generator has the option to fill them in or not. It is conceivable that individual states may require some "voluntary

fields" to be filled out by generators located in their state, or by generators that wish to participate in a particular state regulatory program, making them mandatory for a subset of participants.

Rationale: Recognizing that the states and provinces in the WECC have various eligibility requirements for different programs, and assuming that all static data are verified, we developed this recommendation based on the practicality and costs associated with verifying all static data. We believe there is some basic information that all participating generators should be required to provide. Such information is necessary for WREGIS to meet it core functional capabilities. However, other static fields are only relevant to generators that wish to participate in a particular state's RPS or other program. The costs to WREGIS for requiring every generator to provide such information and thus verifying this information, even if the generator has no interest or intention of ever participating in that state's program, could be significant without providing much benefit. Therefore, we assume generators will only fill out those fields that are relevant to their sales or contracts. This will help keep verification costs down. We received only one comment on this subject, which was that a complete data set would be preferable. While we agree with this general principle, in this case, we feel the costs outweigh the benefits.

If it is determined that the inclusion of “voluntary” data fields will significantly delay the launching of WREGIS, we anticipate that there would be a decision made to launch WREGIS without voluntary data or to establish placeholders for voluntary data. In this case, system users would be referred to states to determine their eligibility for various state programs. However, at this time, we believe that the inclusion of voluntary data fields will not add significant costs or delays to launching WREGIS.

9) Recommendation: All renewable generators with a WREGIS account must fill in the following static data fields. These are considered mandatory fields.

- Company contact information
- Physical location of the generator
- Fuel or energy source (if dual-fuel facility - percent of each fuel source required)
- Technology type
- Date when generator first commenced operation (month, day, year)
- Installed capacity
- Facility owner
- Facility ownership type -- consumer-owned utility, IOU, private company, tribe
- Facility operator
- For repowered facilities, "Repower Date"
- An affirmation that the RECs are whole (contain all the energy-related environmental benefits, and are not disaggregated- See Recommendation 15)
- First point of interconnection
- Delivery points of generating unit

We recommend that an appropriate identification number or numbers be included as a mandatory field. We prefer to use a single, existing numbering system for all generators in WREGIS if it is possible, although more research into this is needed to determine which generator ID number should be used.

We recommend that any fields needed to determine the number of RECs coming from a dual-fuel facility be mandatory. This is another area that needs more research and will be referred to the Operational Rules Committee.

Rationale: These fields were selected as mandatory fields because they meet one of the following criteria: (1) they are necessary to establish basic account contact information, (2) they are necessary to identify the facility and specific generation characteristics of the facility that are relevant for REC financial transactions, (3) they identify to whom RECs should be issued, and (4) they are needed to determine the number of RECs that should be issued. We received very few comments in the workshops or survey related to specific fields that should or should not be included.

10) Recommendation: The following voluntary fields may be established for static information. If voluntary data fields are established, generators that have an account with WREGIS can decide whether or not to fill in these fields. Many of these fields are necessary to determine eligibility with one or more state regulatory programs or voluntary certification programs, and may be important for state regulators or voluntary certifiers to determine the generator's eligibility for a particular program. Consistent with Recommendation 8, the following voluntary data fields will only be included if it is determined that their inclusion will not significantly delay the launching of WREGIS. At this time, we do not believe that their inclusion will cause delays.

- Any information, in addition to what is provided in the mandatory fields, necessary to determine eligibility for any of the following programs:
  - CA RPS eligibility
  - CA SEP eligibility
  - NM RPS eligibility
  - NV RPS eligibility
  - AZ RPS eligibility
- Facility emissions
- For hydroelectric facilities, whether the facility is outside protected areas as defined by federal law in effect on July 23, 1999 (OR)
- For hydroelectric facilities, whether the facility is certified as 'low-impact' (OR)
- For biomass facilities, whether the facility meets OR definition of “low-emission nontoxic biomass based on solid organic fuels from wood, forest and field residues” or “dedicated energy crops available on a renewable basis.” (OR)
- Whether facility receives state public benefit fund support
- Whether the facility is certified by an independent certification body (a code will be used in the field to indicate who the certification body is, e.g. Green-e, EcoLogo, etc.)

In addition, we recommend that a number of placeholders be included in the system to accommodate information that may need to be tracked in the future. In addition to a number of blank fields, we recommend that placeholders be added for the following information. These fields will remain inactive until such time as the data in these fields is needed and verifiable.

- Quantity and type of emissions displaced by the facility
- Whether or not the facility receives emission allowances
- Whether the facility receives federal production tax credits

Rationale: As stated above, we view the data in these fields as necessary for some generators, but perhaps not relevant to all. These voluntary fields were selected on the basis of their importance to a number of Western stakeholders, as expressed in the survey, the workshops or the written comments. We also included fields that would be necessary for exporting certificates from the WREGIS into other tracking systems. The intent in selecting these fields was to include only those fields that will have a significant amount of interest; we did not include fields that would only be relevant to a small number of parties or for which there was not a regulatory or market benefit.

With regards to emissions displacement values, there is currently no universally accepted way to calculate emissions displaced from renewable generation. That said, there are efforts underway to develop a universally accepted calculation for North American renewable generators, and we believe that this may be increasingly important. For these reasons, we opted to include an inactive placeholder instead of an active data field.

With regards to emissions allowances, this field was included but not activated because very few renewable generators are given emissions allowances under cap and trade programs today. However, there are many market participants who currently advocate for changes to these policies in the U.S. In addition, it is likely that if the Kyoto Protocol enters into force, Canadian and Mexican market participants may need WREGIS to track whether a generator has been granted allowances. This could also become increasingly important for marketing claims if generators are not given allowances.

Updating Static Information

11) Recommendation: Some static information requires periodic updates. WREGIS will prompt account holders to review static data and update it not less than annually. Fuel information may be updated more frequently or as needed. The question of how often each static data field needs to be updated, and what the mechanism is for updating such information will be sent to the Operational Rules Committee for review and a more complete recommendation.

Rationale: We originally recommended that all static data be annually updated. However, we received several comments from workshop participants that indicated that some static data should be updated whenever changes were made, particularly for things like fuel type or changes in ownership. Our recommendation reflects an agreement with these comments, and an acknowledgement that more research needs to go into this issue.

Dynamic Data that Will Be Tracked by WREGIS

12) Recommendation: The following dynamic information will be collected:

- Quantity of energy generated (denominated in MWh)
- Unique serial number for each certificate issued (one per MWh)
- Date of generation (month/year)
- First buyer of the electricity if it was sold separately from the REC

Rationale: We received very few comments in the workshops or survey related to specific fields that should or should not be included. These fields were selected for one of the following reasons: (1) they are needed to determine the number of RECs that should be issued, (2) they are needed to establish eligibility of the RECs for one or more state regulatory programs, or (3) they will help the regulators and market participants ensure that no-double counting is occurring.

The quantity of energy generated is denominated in MWhs primarily because it is the smallest denomination that is practical, taking into consideration both small and large generators. It is also consistent with other tracking systems in the U.S. and Europe. A serial number is needed to identify RECs. The date of generation is needed to identify eligibility for some state regulatory programs as well as to calculate pollution displacement.

We received many comments supporting a month/year date stamp for RECs. Several people commented that this interval is consistent with utility financial settlements data and that more frequent interval data, such as including the day or time of day, could be difficult to obtain because some utilities do not measure generation that frequently. Utility financial settlements data is anticipated to be a primary source of generation data. We also received comments that a peak/off-peak or time of day stamp might be useful, particularly in the future if RECs are sold into emissions markets. Allowing renewable generators to access different markets is consistent with the WGA's policy resolution to support commercial trading of RECs. Therefore, to the extent it does not significantly add to the initial costs of WREGIS, we intend to include some blank fields that could be used for this data in the future, if a cost-effective method for including generation data with more granularity is identified.

Other Tracking System Issues

Definition of a REC

13) Recommendation: For the purposes of inclusion in WREGIS, a REC is defined as the electronic record of generation, including all of the data fields associated with the MWh of generation as recorded in WREGIS, and as identified by a unique serial number. Not all RECs tracked in WREGIS necessarily meet a particular state's definition of a REC.

Rationale: Individual states in the West are in various stages of defining RECs for the purpose of determining eligibility for a particular state regulatory or voluntary program. The Energy Commission and WGA intend for WREGIS to track the information that is needed for individual states to determine if a MWh of generation meets their definition of a REC. However, just because a MWh of generation is tracked in WREGIS or has a WREGIS serial number does not guarantee that it meets a given state's definition of a REC.

Inclusion of Disaggregated RECs in WREGIS

14) Recommendation: Only "whole" RECs will be tracked in WREGIS. If a REC owner wants to disaggregate their REC, it will be required to retire those RECs from WREGIS first, citing disaggregation as the reason for retirement. Disaggregation is defined here as separately selling some aspect of the REC to another party.

WREGIS will conduct an initial screening process to ensure that disaggregated RECs are not inadvertently being included in the WREGIS. This would be in the form of an annual attestation by generators that all of the RECs are fully aggregated.

Rationale: There were conflicting comments related to tracking disaggregated RECs in the survey. The majority of written comments from the survey, workshop and comments on the draft report, were strongly against disaggregation, arguing that it will be too complicated to track disaggregated RECs and the disposition of their component parts, and that disaggregation should be discouraged generally because of potential fraud and consumer protection concerns. Some people, however, suggested that disaggregated RECs could be included in WREGIS as long as it was noted that they were disaggregated. Though we acknowledge the logic in both arguments, at this time we recommend that only whole RECs be tracked by WREGIS, and that WREGIS conduct an initial screening process to ensure that disaggregated RECs are not inadvertently being included in the WREGIS. If a generator then wants to sell some portion of the RECs in their account to an emissions broker (for the purposes of disaggregation) it could simply retire those RECs from WREGIS.

We recognize that a more precise definition of disaggregation may be needed for the attestation and screening process. The Operation Rules Committee will be working on this issue.

Life Span of Certificates

15) Recommendation: WREGIS will not limit the lifespan of RECs, meaning that RECs will remain a tradable commodity in WREGIS until they are retired.

Rationale: The overwhelming majority of comments received agreed with our recommendation. The specific policies and programs for which certificates are used will dictate their life span. For example, a state RPS program may specify that only RECs generated in the current year can be used to meet the current year's obligation. We intend for WREGIS to track enough information so that states can easily assess eligibility. However, we did not want to restrict the lifespan of RECs system-wide because different states have different eligibility requirements, and because not all RECs will be used for regulatory purposes.

The related question of how certificates should be retired and under what circumstances is retirement required needs further discussion and refinement and should be part of the responsibility of the Operational Rules Committee.

Tracking of Retail Transactions

16) Recommendation: WREGIS will not track retail transactions, except for large commercial/industrial and institutional buyers who establish accounts with WREGIS. Utilities and retail marketers will be able to retire certificates in aggregate on behalf of their green power or REC customers, but the retirement will not transfer RECs to individual residential accounts or list individual retail sales, with the exception stated above.

Rationale: The majority of comments received agreed with our recommendation, although in the Arizona workshop, there was some interest in small buyers to be able to establish accounts in WREGIS. It is clear that WREGIS needs to track wholesale, and intermediary REC transactions to meet the policy objectives of the Energy Commission and the WGA. However, beyond allowing utilities and retail marketers to retire certificates on behalf of their green power customers, we believe that tracking retail buyers of RECs at the level of individual end-use customers would increase system cost without commensurate benefit.

Weighted State RPS Credits

17) Recommendation: For states that have a system of weighing some RECs more than others for certain programs, WREGIS will track the information necessary for a state to determine the level of credit a REC will receive. However, WREGIS will not apply any multiplier or weighting system to any RECs tracked in WREGIS, thus one REC in WREGIS will equal one MWh of generation consistently.

Rationale: Several respondents to the survey noted that some western RPS states give different weightings to different types of renewable systems for the purpose of RPS compliance. However, we feel that the process of weighting RECs or applying a multiplier to some RECs should occur at the state regulatory level. All of the written comments we received on this issue agreed with this recommendation.

Institutional Issues

18) Recommendation: We recommend that institutional issues be referred to the Institutional Committee for more research and a recommendation.

Rationale: A question in the survey that asked which entity should be responsible for administering the tracking system provided an inconclusive answer. By far the largest segment of respondents were unsure or had no opinion. Other responses of note suggested an independent non-profit formed specifically for this purpose, and the WECC. We received very few additional comments in the workshops or written comments on this topic. In general, from the workshops and written comments, there seemed to be a slight preference for an independent organization or a non-profit with a governing board to oversee administration and operations. Several stakeholders also brought up the fact that there may be issues of liability associated with operating WREGIS that could be pertinent to finding an existing organization to house WREGIS. We believe that the institutional question hinges on a number of legal and political issues that would be best served by further research by a high level committee of state and market representatives.

Planning and Process Issues

19) Recommendation: The Energy Commission has established a goal of launching WREGIS in January 2005. Although this deadline sets out a very ambitious timeline of activity, we remain committed to meeting this goal by trying to focus on the most immediate needs in setting up the system, to borrow heavily from existing work that has been done in Texas, NEPOOL, Wisconsin and Europe, and to build in flexibility so the system can be expanded in the future as needed.

The first immediate goal is to issue a Request for Proposals (RFP) for a contractor to design the software that will run WREGIS. In order to issue an RFP, we recommend narrowing the scope of the RFP, by developing some Interim Operating Rules that will state more specifically how WREGIS will operate. To do this, we are forming an Operational Rules Committee to draft Interim Operating Rules that will state with more specificity how WREGIS will perform some of the functions laid out in this Report. In addition, there will be a subgroup within the Operational Rules Committee to investigate and develop how the dynamic data will be collected and what security and data integrity standards must be met. Concurrently, we will be establishing an Institutional Committee to address the governance and institutional issues for WREGIS.

Throughout all of this, there will be opportunities for stakeholders to review and comment on recommendations that are made.

Rationale: We received comments in the workshops, written comments, and survey that in order to meet the timeline, WREGIS should focus on the basics to get the system up and running as soon as possible. We agree with these comments, and intend to start with the most immediate needs first.

We also heard from some who were familiar with the RFP process in New England that we should not try to develop Operating Rules, but should send out an RFP immediately based on the findings of this Report, and let the contractor develop the operating rules. This was the approach that was used in New England. Since the circumstances in New England are much different than ours, there are a number of reasons why we have decided to try to develop some Interim Operating rules before the RFP is issued. First, NEPOOL was the first U.S. entity to develop a certificate tracking system, so they did not have any other models to borrow from. We feel that NEPOOL, ERCOT and other tracking systems have grappled with many of the same issues that WREGIS has to address and that we can learn from their experience, and replicate some of the decisions they have made, instead of starting from scratch. In fact, we received many comments that suggested we do this very thing, and we agree with these comments.

Second, from a contracting standpoint, we feel that we will be able to get much more competitive and comparable bids if we reduce uncertainty as much as possible by providing the potential contractors with as much detail as possible about how we want WREGIS to operate, what functions it needs to do, and where it will get the data. The Data Sub-Committee will do much of the legwork of identifying where WREGIS will get the dynamic data and this will also help reduce potential uncertainty. This Committee is being staffed by a high-level data systems expert familiar with generation issues in the West. In addition, the Data Sub-Committee will look at the data integrity standards laid out by NEPOOL and ERCOT for possible lessons. By narrowing the scope of what is being asked for in the RFP, we believe that we get more comparable and competitive bids. This conclusion is supported by

the fact that NEPOOL had to rebid their system three times before an acceptable bid was received.

Third, because NEPOOL is a system operator, they already had a democratic decision-making structure in place and had a mechanism for including state regulatory input. These conditions do not exist in the West, and we feel that it would be very difficult, and possibly inappropriate, to ask the potential software contractor to manage an eleven state stakeholder decision-making process. Instead, we feel that the Energy Commission and WGA are best suited to this task.

All of this said, we fully acknowledge that we will not be able to develop the "final" Operating Rules without the input of the software contractor, and any Operating Rules that are developed in advance of the RFP will likely undergo some modifications based on the practicalities of the software programming. Despite this, we feel that the most expeditious and cost-effective way to proceed is to make as much progress on creating Operating Rules in advance of issuing the RFP.

We also received many comments that there should be ample opportunity for stakeholders to comment on proposed recommendations as they are being developed. We agree with this in principle, though in practice, it will be difficult to conduct the type of outreach that may be necessary to get input given the aggressive timeline. For example, we will most likely not be able to conduct multiple regional workshops on various issues. Because of this, we intend to make decisions as transparent as possible and to offer opportunities for stakeholder input by posting documents on the website and circulating drafts to interested parties. We strongly encourage and hope that stakeholders will remain actively involved by reading materials, providing comments when possible, being aware of deadlines, and participating in the committee decision-making to the extent possible.

Next Steps

The Western Governors' Association and the California Energy Commission will be forming committees to develop recommendations on specific issues. As recommendations are developed by the committees, they will be circulated by email for review and comment. They will also be posted at the following web address:

www.westgov.org/wieb/wregis/

If you would like to be added to the distribution list, please send an email to: mlehman@resource-solutions.org, and asked to be added to the "WREGIS Working Group Distribution List."

Recommendations on the institutional structure and "Interim Operating Rules" will be developed over the first quarter 2004. This is the most crucial time for stakeholder participation, and we strongly encourage comments on draft recommendations.

These recommendations will be used to define the scope of work for the software contractor. A Request for Proposals (RFP) for developing the WREGIS software will be released in March or April of 2004.

Recommendations on lower priority issues, as indicated throughout Section 1 of this report, will be formulated throughout 2004. Again, stakeholder participation is strongly encouraged.

The WGA and Energy Commission have a goal of launching WREGIS by January 2005.

2. BACKGROUND OF THE NEEDS ASSESSMENT PROCESS

In June 2002, Western Governors adopted an amendment to the Western Governors' Association (WGA) resolution, *Western States' Energy Policy Roadmap*. The amendment expressed support for (1) creation of an independent regional tracking system to provide data necessary to substantiate and support verification and tracking of renewable energy generation; and (2) establishment of a single institution in the West that will register, issue, and facilitate commercial trading of renewable energy certificates (RECs).

Included in the resolution is a management directive charging WGA to bring Western stakeholders together to help define the institutional structure, design operating guidelines and identify information needed to support tracking and accounting of renewable energy generation and registration of RECs in the Western Interconnection. Such a system will help state regulators verify compliance with state Renewable Portfolio Standards, facilitate the development of a voluntary renewable energy market, and provide an important verification function for REC transactions in the West.

What Are RECs?

RECs represent the separable bundle of non-energy attributes (environmental, economic and social) associated with the generation of renewable electricity. RECs are sometimes also referred to as green tags, green tickets, and tradable renewable certificates. A REC is created for every unit of renewable electricity output (usually denominated in MWh), and no more than one REC can be created for any given unit of generation. In this report, we will use the term REC in its broadest definition to mean simply the electronic record of generation, including all of the data fields associated with the MWh of generation as recorded in WREGIS, and as identified by a unique serial number.

Accordingly, the WGA, with assistance from the California Energy Commission (Energy Commission), developed a survey to identify the specific tracking and verification needs of regulators, utilities, market participants, tribes, developers and other stakeholders in the West.

This report is a summary of the responses to the survey of stakeholders about their needs and expectations for such a tracking and accounting system. In Section 3, we describe the method used to conduct the survey, summarize to whom it was sent, and tabulate the responses received. The next several sections describe the responses to each question of the survey:

Section 4. Respondent preferences for the general functions and capabilities of a WREGIS
Section 5. Types of information that respondents want the system to track

Section 6. Expectations for data sources
Section 7. State regulatory needs that the WREGIS should support
Section 8. Respondent opinions about institutional and planning issues

Background on Tracking and Accounting

The proposed Western Renewable Energy Generation Information System (WREGIS) is a result of a growing recognition among policy-makers and regulators that tracking and accounting of renewable energy generation is critical to verification of compliance with various policy mandates, and for consumer protection in voluntary green power markets. Such accounting and verification systems are trending toward tracking ownership of RECs because they are increasingly used to convey the attributes of renewable generation. Tracking REC trading is also growing because it offers greater flexibility and lower cost compared to following contracts for verification of renewable energy generation and purchases.

The rapid adoption of RECs for regulatory and commercial purposes stems, in part, from the mismatch of renewable generation and consumption profiles. Because most renewable energy requirements (and customer demands for renewable energy) require an annual compliance demonstration, a minute-by-minute match of renewable generation and consumption is unnecessary. For their part, RECs provide a flexible mechanism for banking of renewable generation attributes that compensates for the fact that renewable energy cannot be easily stored to match a specific customers' load and that some renewable resources are intermittent. Banking can occur on any time scale that regulators deem appropriate for their state.

Currently, there are three operational electronic accounting systems in the United States to issue and track renewable certificates and more broadly, generation attribute certificates: the Texas RECS Program, the Wisconsin Renewable Resource Credit program, and the NEPOOL Generation Information System. In addition, there are well-established certificate tracking systems in Europe and Australia.

Typical Applications for RECs

RECs are increasingly used in both retail and wholesale electricity markets by generators, wholesalers, brokers, agents, retailers and customers as a commercial accounting mechanism for renewable energy, and by environmental and utility regulators to demonstrate compliance with state renewable energy purchase mandates and other energy and environmental program requirements.

A key use of RECs is as an accounting mechanism for states implementing RPS policies. There are presently ten states that are using or that plan to use RECs for RPS compliance purposes: Arizona, California, New Mexico, Nevada, Texas, Massachusetts, Maine, Connecticut, New Jersey, and Wisconsin. The Texas and

New England systems are currently the most well-developed and advanced of these systems.

REC systems typically issue a unique certificate (with a unique serial number) for every unit of renewable electricity generation (typically, each MWh). By tracking that certificate through intermediate transactions from the renewable generator to the load serving entity (LSE), state regulators can easily determine whether an LSE has met its renewable energy mandate. RECs can be used for accounting purposes whether RECs are transacted separately from or bundled with electricity, though a principal benefit of RECs comes in their ability to be transacted separately from electricity.

3. SURVEY METHOD AND DEMOGRAPHICS

A representative list of stakeholders and their email addresses was compiled by a joint effort of the Western Governors' Association, the California Energy Commission and the Center for Resource Solutions (CRS). This list contains 195 names but is not a random sample, nor was it intended to be. We wanted to obtain the opinions and information from knowledgeable people representative of a broad range of interest groups. A list of organizations that were surveyed is provided in Appendix B.

The web-based survey was pre-tested by several parties involved in planning the survey, and then final changes or clarifications were made.

The day before the survey was sent out, a letter from Jim Souby, Executive Director of the Western Governors' Association, and Robert Therkelsen, Executive Director of the California Energy Commission, was emailed to stakeholders on the list to alert them to the upcoming survey and to request their cooperation and participation.

The email initiating the survey was sent out August 26, 2003. Recipients could click on a link that would take them directly to the web survey. The survey is included as Appendix A. Reminders were sent out to those who had not registered responses on September 3 and again on September 5. In addition, an email was sent on September 10 to those organizations that had not registered a response, and a time extension was granted to them until September 24. Telephone calls were also made to encourage responses.

As the survey questions were answered, the survey software recorded responses. The responses were then analyzed for this report by the CRS team.

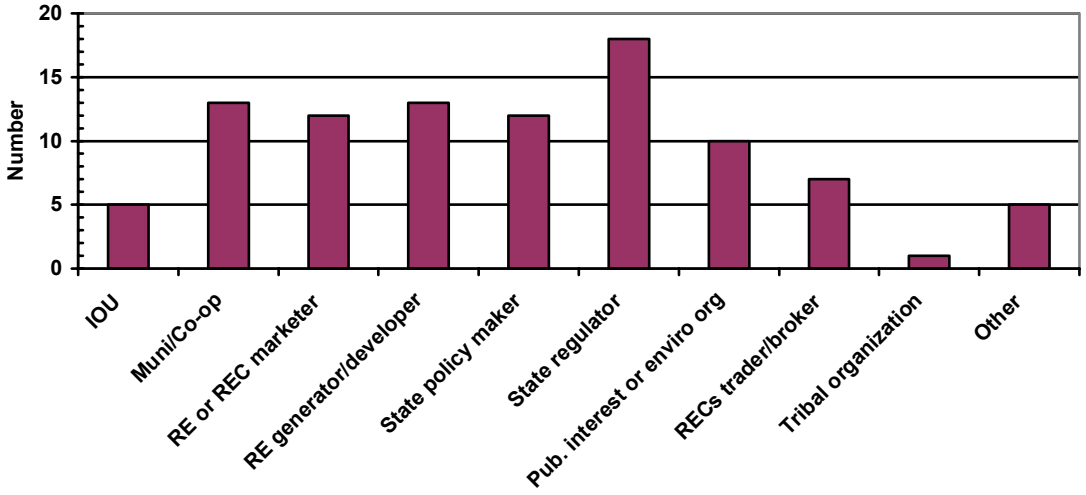
Survey invitations were sent to 195 representatives of investor owned utilities, municipal and other customer-owned utilities, state and provincial agencies, federal (US and Canada) agencies, energy service providers, REC marketers, emissions brokers, generating companies and associations, tribes, renewable project developers and renewable equipment manufacturers, environmental groups, local government (other than municipal utilities), and otherwise uncategorized recipients.[5] In some cases more than one person in an organization received an invitation to participate if they were known to be knowledgeable and involved in the issues.

In many cases, organizations surveyed are active throughout the region or nationally. For example, energy service providers, RECs marketers, generation companies and associations, emissions brokers, developers and manufacturers, and environmental groups are usually not confined to one state. State energy agencies in all eleven states in the Western Interconnection, and three provinces, were invited to respond. In most of these cases, several different agencies were represented.

[5] Otherwise uncategorized includes respondents from a university, National Park Service, federal power marketing agency and a state power marketing agency.

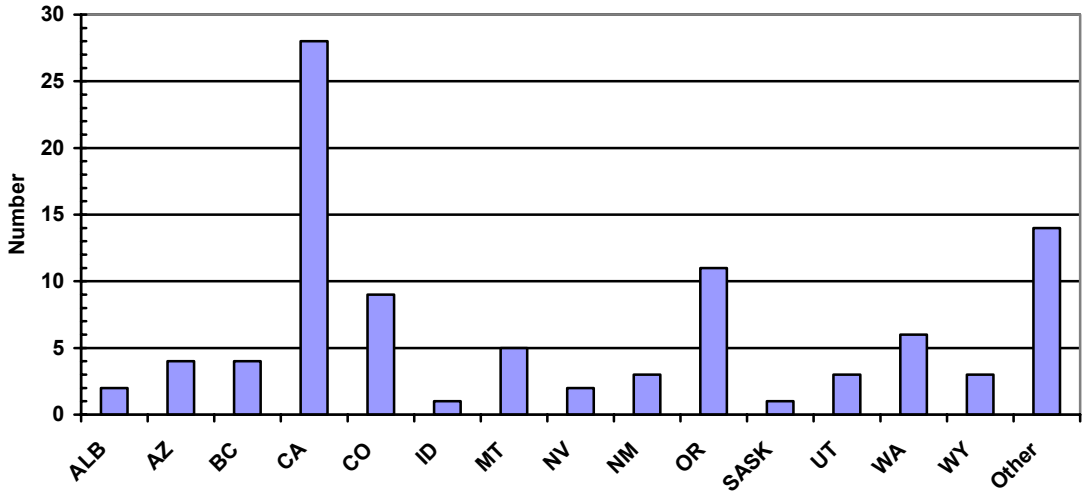
We received 75 responses from those to whom we sent survey invitations and an additional 21 from others to whom the survey was forwarded. (Some original recipients asked or encouraged other colleagues to respond to it, sometimes in their stead, and sometimes in addition to the original recipient's response.) Taking these into account, and shown in **Figure 1**, we received a total of 96 responses for a response rate of 44% (total responses (96) divided by original recipients plus additional people who responded (216)).

Figure 1. Distribution of Surveys Returned, by Category of Respondent



In terms of geographic distribution, we received responses from each of the western states and the three western provinces of Canada, as shown in **Figure 2**. Telephone area codes were used to identify each respondent's state. Twenty-nine percent of the responses came from California, but despite this statistic the survey results are not dominated by California state needs. Many of these California-located respondents represent companies or organizations that are active throughout the west or the nation. When we report results by state, we try to indicate whether we are reporting all responses or only the responses by state regulators or policy makers, who are more evenly distributed among the states. There were also 14 respondents located in 11 non-western states, representing organizations with a stake in western markets.

Figure 2. Distribution of Responses by State or Province



Most importantly, we received at least one response from a policy-maker or regulator representing each state or province, with the exception of Alberta. Again emphasizing that this is not intended to be a random sample, we feel that a wide variety of perspectives are represented in the results.

4. WREGIS FUNCTIONALITY

A tracking and accounting system should serve the public policy needs of regulators and state agencies responsible for carrying out energy and environmental programs. The system should be designed to allow markets to work efficiently, and to do the job it is designed to do as cost-effectively as possible.

We asked recipients to indicate the primary functions that a Western renewable energy tracking system should be able to perform. Respondents were asked to pick up to six functions. The results for all options are summarized in **Table 1**, rank-ordered by number of respondents checking each function.

Respondents who said that the tracking system should be able to verify other state regulatory programs or functions were asked to specify what these other programs or functions are. As **Table 1** indicates, we received 16 comments, but most were general comments relating to tracking system purpose and design, and did not indicate any other programs. One comment mentioned Nevada's Renewable Credit Trading Program (which is linked to that state's RPS), and another mentioned the Million Solar Roofs program (a U.S. Department of Energy initiative).

Table 1. Primary Functions for Tracking System

Rank	Function	Number	Percent
1	Prevent double counting or double selling of renewable certificates	79	83.2%
2	Verify quantity of MWh generated	64	67.4%
3	Issue certificates with a unique serial number for every MWh of renewable generation	57	60.0%
4	Track renewable transactions at wholesale level	45	47.4%
5	Verify compliance with state RPS	41	43.2%
6	Create reports about renewable certificates transacted for regulators and other users	36	37.9%
7	Record renewable certificate imports to and exports from the Western Interconnection	33	34.7%
8	Verify retail green product claims	30	31.6%
9	Record or verify bundled renewable electricity deliveries (where the energy and attributes are not separated)	25	26.3%
10	Calculate emissions displacement from renewable energy generation	17	17.9%
11-13	Verify other state regulatory program or other function (specify)	15	15.8%
11-13	Verify information on environmental disclosure labels	15	15.8%
11-13	Produce environmental disclosure labels for utilities and other retail sellers	15	15.8%
14	Unsure/don't have an opinion	5	5.26%
15	Track renewable transactions for large institutional retail customers	5	5.26%

Most of the respondent categories agreed largely with the top six functions listed in **Table 1**. State and Provincial policy makers helped set the priorities by agreeing with

all six, but because of ties in the numbers, their top six also includes verifying retail green product claims, tracking imports and exports, and verifying environmental disclosure labels. State and Provincial regulators also agreed strongly with the top six functions overall.

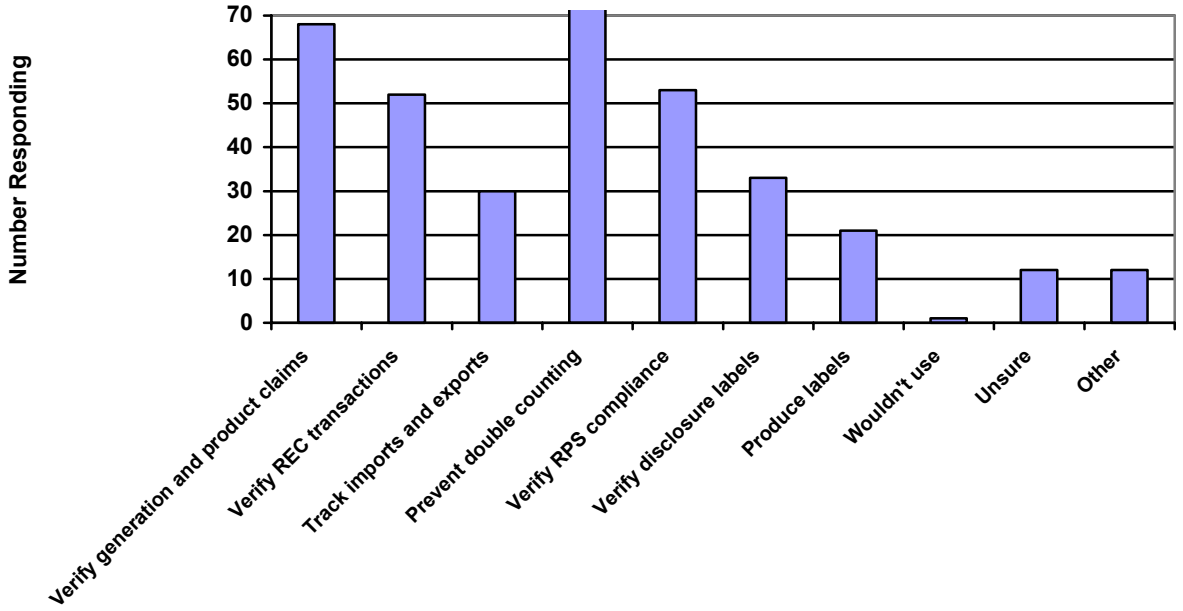
Utilities, both investor-owned and customer-owned, also agreed strongly with the top six functions overall. Renewable energy and REC marketers agreed with four of the six, but placed a higher priority on verifying retail product claims and tracking imports and exports. Renewable energy generators and developers agreed with four of the top six, but their priorities included recording or verifying bundled renewable energy deliveries.

Public interest and environmental organizations put verifying retail green product claims into the top six, and environmental traders or brokers felt that tracking imports and exports should be in the top six functional capabilities.

Uses of the Tracking System

Respondents were also asked, “If the system were capable of performing the functions you have checked above, how would you use the tracking system?” In this case respondents could check all that applied. The results are summarized in **Figure 3**.

Figure 3. Uses of the Tracking System



Respondents that checked “Other” were asked to specify how they would use the tracking system. Comments included:

- “Possibly to quantify emissions reductions claims such as GHG”
- “To publicize and educate others on the benefits of sustainable clean alternative energy”

Several respondents noted that they would not use the system directly but would benefit from it or knew others that would benefit from it.

With the exception of preventing double counting and verifying renewable generation, the responses by type of respondent varied considerably. The entries in **Table 2** show both the number of respondents and the percentage of all respondents. Responses are rank-ordered by number of all respondents.

Apart from those two uses, it is surprising that the 17 regulators responding to this question appear not to think alike. Their choices were spread over all the options (even though they could check as many as they liked), with the result that it appears they have no strong feelings about how the system would be used (or that they don’t understand how it relates to other programs such as RPS legislation). For example, most groups felt that verifying compliance with state RPS is an important use of the system, but only four regulators (24%) checked that option.

Tracking REC imports and exports was not of pronounced importance overall, but was relatively important to renewable energy and REC marketers, state and provincial policy makers, and environmental traders and brokers.

Respondents gave greater weight to verifying information shown on disclosure labels than to producing the numbers to put on a disclosure label. Interest in either was uneven, however, with the strongest interest indicated by municipal and other customer-owned utilities, and public interest or environmental organizations.

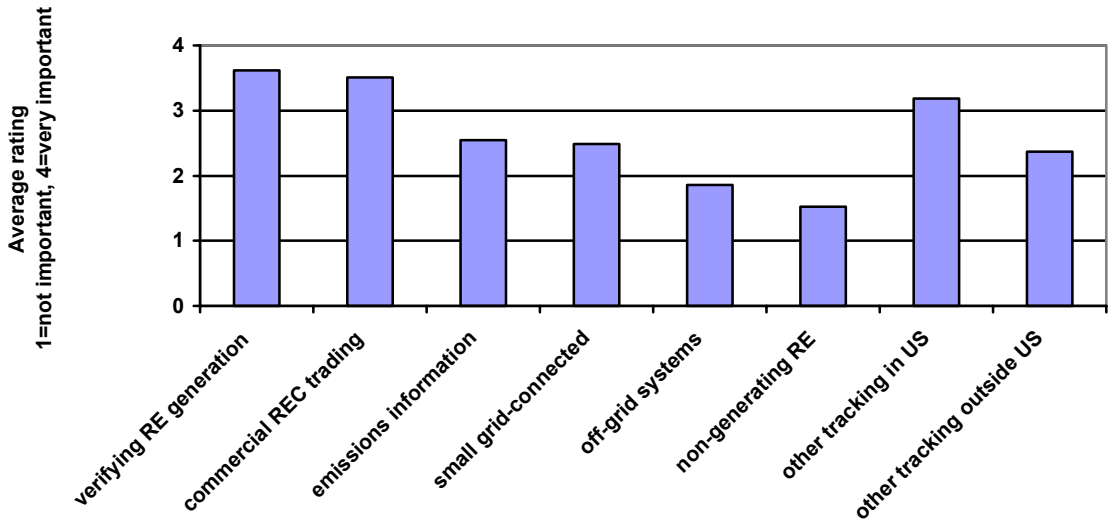
Table 2. Uses by Organization Category (number responding and percent)

Uses of the Tracking System	All respondents	Investor owned utility	Muni or other customer owned utility	Renewable energy or REC marketer/ trader	Renewable generator/ developer	Policy maker	Regulator	Public interest or enviro group	Envir. trader/ broker	Tribal org	Other
To prevent double counting or double selling of renewable certificates	72/75%	3/60%	12/92%	10/83%	11/85%	8/67%	10/56%	8/80%	5/71%	1/100%	4/80%
To verify generation from a specific renewable generation unit	65/68%	3/60%	10/77%	10/83%	8/62%	10/83%	9/50%	7/70%	4/57%	1/100%	3/60%
To verify renewable certificate transactions in the Western Interconnection	52/54%	3/60%	5/38%	8/67%	8/62%	9/75%	5/28%	6/60%	5/71%	1/100%	2/40%
To verify or show compliance with state RPS	52/54%	3/60%	7/54%	7/58%	10/77%	7/58%	4/22%	6/60%	4/57%	0/0%	4/80%
To verify or show that the information on state environmental disclosure labels is correct	32/33%	0/0%	7/54%	3/25%	3/23%	4/33%	6/33%	6/60%	1/14%	1/100%	1/20%
To track renewable certificate transactions between the Western Interconnection and other tracking systems	30/31%	0/0%	3/23%	6/50%	4/31%	6/50%	1/6%	4/40%	5/71%	1/100%	0/0%
To produce the numbers to put on an environmental disclosure label	21/22%	0/0%	7/54%	2/17%	1/8%	2/17%	4/22%	3/30%	1/14%	1/100%	0/0%
Other	15/16%	0/0%	0/0%	2/17%	4/31%	1/8%	2/11%	4/40%	2/29%	0/0%	0/0%
Unsure, don't know if I would use it or not	12/13%	2/40%	1/8%	1/8%	2/15%	1/8%	4/22%	0/0%	1/14%	0/0%	0/0%
I wouldn't use the system	1/1%	0/0%	0/0%	0/0%	0/0%	0/0%	1/6%	0/0%	0/0%	0/0%	0/0%

Relative Importance of Tracking System Capabilities

Questions 5 through 10 asked respondents about the importance of various system capabilities, "assuming a positive answer to the questions below does not significantly increase costs." Responses were given on a 4-point scale, where 1 = not important and 4 = very important. **Figure 4** shows the relative importance (average scores) of various tracking system capabilities.

Figure 4. Relative Importance of Various System Capabilities



Clearly, tracking and accounting for renewable energy generation in the Western Interconnection, and accommodating commercial trading of RECs, have a high degree of agreement among stakeholders. Over 63% of respondents believe these are very important functions.

The overall rating shown at a glance in **Figure 4** obscures some important differences in opinion. **Table 3** provides more detail on the responses to these questions. The numbers in bold are intended to highlight the strongest response categories.

A majority (57%) agrees that it is not important to accommodate renewable energy technologies that do not generate electricity, such as solar domestic hot water heating. There is also good agreement that exchanging information with other tracking systems in the country is either very important (44%) or important (25%). Most respondents are in the middle (average response = 2.37) over the importance of exchanging information with tracking systems outside the US, however.

Respondents are divided over whether emissions information should be tracked, with 25% agreeing it is very important and 22% saying it is not important. Further,

those that are in the middle (somewhat important or important) are also almost evenly divided.

Tracking small, on-site, grid-connected systems and tracking remote, off-grid generators do not, at this time, show a strong consensus, but respondents lean towards not including them at this time. Respondents are more favorable towards grid-connected systems than towards off-grid generation. About 40% say that grid-connected generators are either important or very important, while only 23% say the same for off-grid systems.

Table 3. Relative Importance of Various System Capabilities

	Not important		Somewhat important		Important		Very important		Unsure or Don't Know	
How important is it to…	**#**	**%**	**#**	**%**	**#**	**%**	**#**	**%**	**#**	**%**
Accurately track and account for renewable energy generation in the Western Interconnection (3.62)	2	2%	6	6%	16	17%	**66**	**69%**	5	5%
Accommodate commercial trading of renewable certificates (3.51)	3	3%	9	9%	16	17%	**60**	**63%**	7	7%
Incorporate emissions information from specific generating units (2.55)	21	22%	20	21%	20	21%	**24**	**25%**	10	11%
Accommodate small, on-grid, on-site generators (e.g., data about photovoltaic and small wind generators located on the customer side of the meter) (2.49)	12	13%	**34**	**36%**	23	24%	15	16%	11	12%
Accommodate off-grid generators (e.g., remote generation) (1.86)	**41**	**43%**	21	22%	15	16%	7	7%	11	12%
Accommodate renewable energy technologies that do not generate electricity (e.g., solar domestic water heating) (3.18)	**54**	**57%**	18	19%	8	8%	3	3%	12	13%

On most of these questions, there was a large degree of congruity across response categories (type of respondent).

Net Metering, Small Scale Generation and Off Grid Generation

State and provincial policy-makers and regulators were asked about specialized needs relating to net metering, small-scale generation and off-grid generation.

One question asked, "Are there any specific types of small or non-generating types of renewable energy technologies you want to have tracked by the system?" Six states and provinces indicated a desire to track small-scale renewable generating

technologies. Three states are interested in tracking non-generating solar thermal technologies. Specific state responses included:

Arizona: “Solar thermal applications.”

California: “Possibly generation from small generators including small wind, PV, solar thermal, digester gas, small biomass, and renewable fuel cells.” Also, “anything that would displace GHG emissions, such as solar thermal, off-grid applications that might otherwise use LPG, etc.”

Nevada: “Solar systems that displace energy use.”

Oregon: Oregon cited its eligible renewable sources (presumably to include any that are small scale, however defined: “(a) Electricity-generation facilities fueled by wind, waste, solar or geothermal power or by low-emission nontoxic biomass based on solid organic fuels from wood, forest and field residues; (b) Dedicated energy crops available on a renewable basis; (c) Landfill gas and digester gas; and (d) Hydroelectric facilities located outside protected areas as defined by federal law in effect on July 23, 1999.” But one Oregon representative was unsure. “It is unclear if small net metered systems (primarily solar) should be [tracked]. If a wholesale market develops, it should be tracked. This is a relatively low priority now.” Another Oregonian stated an opinion that non-generating renewable energy technologies should not be tracked, but added, “If a vendor is selling tags from small generating systems, somehow that should be tracked. But I hope there's a way to do it in aggregate (lots of small systems aggregated by one vendor).”

Saskatchewan: “The Environmentally Preferred Power procurement program (45 MW target) includes a wide range of eligible technologies, some of which may be behind the customer meter.”

Utah: “Photovoltaic and wind on the consumer's side of the system.”

Three questions asked, “Does your state have an accepted methodology for collecting the generation data from any of the following: net-metered systems, small-scale systems, or off-grid systems?” Of all respondents that answered these questions, most were unsure or didn’t know, as shown in **Table 4**.

Table 4. Existence of Methodology for Collecting Generation Data, All Responses

	Yes	No	Unsure	# Responding
Net- metered systems	7%	38%	55%	87
Small-scale systems	6%	39%	55%	87
Off-grid systems	0%	46%	54%	87

Since we were most interested in the data by state, **Table 5** summarizes the responses of state and provincial policy makers and regulators. If more than one person from a state responded with conflicting answers, we selected “yes” or “no” over unsure; if the answers were in opposition, i.e., “yes” and “no,” we indicate both in the table.

Table 5. Existence of Methodology to Collect Generation Data, by State

State	Net-metered systems			Small-scale systems			Off-grid systems		
	Yes	No	Unsure/ DK	Yes	No	Unsure/ DK	Yes	No	Unsure/ DK
Alberta			NR			NR			NR
Arizona		X			X			X	
British Columbia		X		X				X	
California	X	X			X			X	
Colorado		X			X			X	
Idaho		X			X			X	
Montana		X			X			X	
Nevada	X					X			X
New Mexico		X			X			X	
Oregon		X		X	X			X	
Saskatchewan		X			X			X	
Utah		X			X			X	
Washington		X			X			X	
Wyoming		X			X			X	

DK = Don’t Know; NR= No Response

It appears from **Table 5** that the respondents were aware of little in the way of accepted methodology for collecting generation data from net-metered, small-scale or off-grid generation. Nevada, and perhaps California, has a method to collect net-metering data. British Columbia, and perhaps Oregon, has a methodology to collect small-scale generation data. And no state or province is capturing off-grid generation data according to the respondents. Should WREGIS planners decide to track generation and certificates from these systems, some new protocols may have to be developed and implemented.

If they answered yes to any of the questions about net metered, small-scale or off-grid systems, respondents were asked to describe the methodology for collecting and verifying the generation data from these systems. They were also asked who or what agency is responsible for collecting the generation data from these systems. The responses are summarized in **Table 6**.

Although not from a state agency, one response made a suggestion. “I think the verification function should be done by an aggregator, who will collect, verify, and attest to the accuracy of generation data. The aggregators would propose a collection and verification methodology to the tracking system managers. As time went on, the best collection methodologies could be codified as procedure. I would also suggest a waiver for very small scale systems (under 10 kW) which did not have separate metering, and to allow an estimation methodology be used to issue certificates for such systems.”

Table 6. Methods to Collect and Verify Generation Data from Small Systems

	Method	Responsible Agency
Alberta*		
Arizona*		
British Columbia	Small-scale facilities: Water licensing and water rental collection for small hydro facilities. Annual reports by the utility to the regulator. Reports to Statistics Canada.	The Comptroller of Water Rights, BC Utilities Commission and Statistics Canada
California	Larger net-metered systems have a separate meter to register generation only and this meter is read by the utility	PUC
Colorado*		
Idaho	The utility purchasing such generation under net-metering tariffs or PURPA QF contracts collects such data but there is no formal reporting required. IPUC could request such specific data as needed.	PUC
Montana*		
Nevada	Net metering: utility does it	PUC
New Mexico*		
Oregon	Small-scale projects that receive OOE (ODOE) small-scale energy loans. These are primarily hydro and cogen. For small wind and PV we estimate the energy output, but these do not reflect actual (post-installation) generation data.	Office of Energy
Saskatchewan*		
Utah*		
Washington*		
Wyoming*		

* No response

Compatibility with Other Tracking Systems

Because RECs are sold nationally and internationally, ensuring that REC imports and exports are properly accounted for is critical to the underlying credibility the market and to the value of RECs in different regional markets. Lack of clarity on where exports have gone or where imports have come from can lead to double claiming of RECs for renewable portfolio standards, green power products or electricity disclosure labels in different states or regions. RECs sold outside the

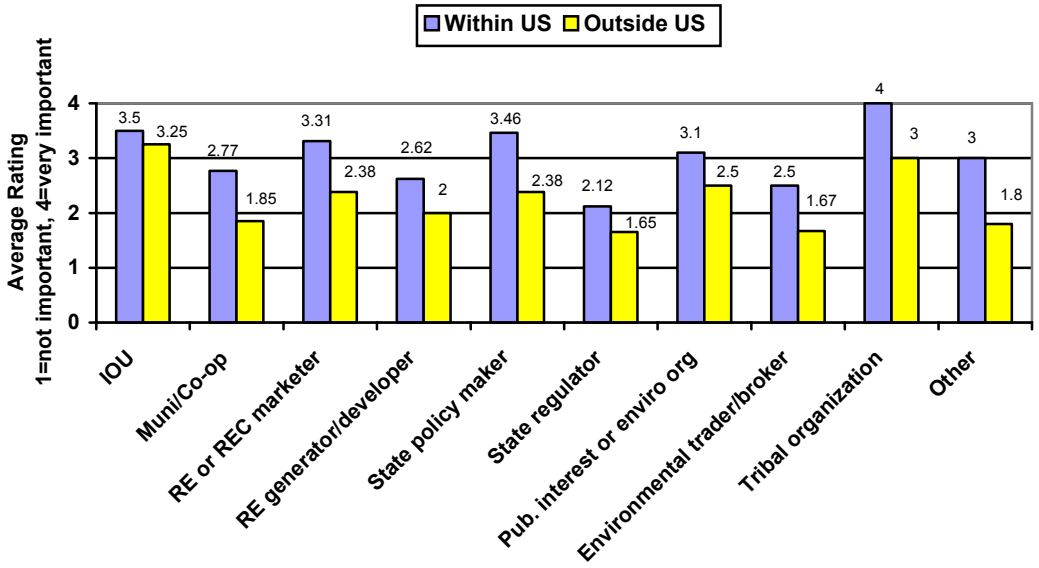
tracking region (and RECs imported to the tracking region) must be subtracted from (or added to) the in-region renewable supply. Compatibility and coordination with other tracking systems allows these adjustments to be made accurately and automatically.

To determine regional perspectives on tracking REC imports and exports, we asked two questions to be rated on a 4-point scale, where 1 = not important and 4 = very important. The first related to exchanging information with other regional tracking systems in the United States, and the second to exchanging information with other tracking systems outside the United States.

There is some agreement (44%) that exchanging information with other tracking systems in the country is very important, and a total of 69% think it is either important or very important. Close to half of the respondents (49%) do not feel strongly about the importance (chose somewhat or not important) of exchanging information with tracking systems outside the US. However the average response was 2.37, indicating that most respondents felt that this would be a somewhat valuable function to have.

The average importance rating from all respondents was 3.18 for tracking exports and imports within the US, and 2.37 for tracking exports and imports outside the US. Because there is quite a bit of variation between respondent categories, we have illustrated average ratings by respondent category below, in **Figure 5**.

Figure 5. Importance of Compatibility with Other Tracking Systems, by Respondent Category



We emphasize that the question of whether to design WREGIS to be compatible with other systems is a question of technical capability, and is entirely separate from state policies that may address this in regards to eligibility for state programs. Whether or not RECs imported from other states, regions or countries may be used to satisfy a state policy mandate is a policy decision that will be made by state policy-makers. Different states may adopt different rules on this question, but the tracking system is neutral, facilitating any policy choice. As to the narrower question of tracking system capability, WREGIS can be designed to be compatible with other tracking systems. Whether or when to implement that aspect of system capability is a question of priority and timing.

5. INFORMATION THE SYSTEM SHOULD TRACK

It is not necessary for states to agree on a common definition of renewable resources for a multi-state tracking system to function. Instead, it is important to identify each state's renewable definition and ensure that sufficient information is attached to each REC such that state officials can identify eligible resources. Using this information, a state can determine whether or not a certificate qualifies for its RPS by type of resource, by the age of the generating facility, by date of generation, or any other criteria a state may wish to adopt.

Generation tracking systems typically track "static" information that only needs to be reported once (or in some cases updated annually), and "dynamic" information that is constantly variable.

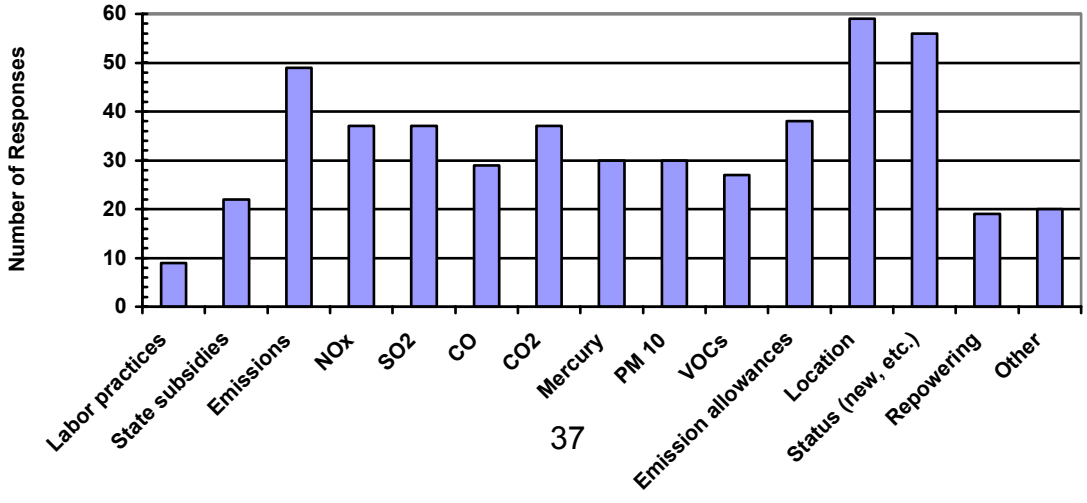
Static Information

We introduced Questions 13-16 by listing static information about the renewable energy generator that is commonly tracked by tracking systems:

- Company contact information
- Physical location of the generator
- Generator ID number(s)
- Fuel or energy source
- Technology type
- Date when generator first commenced operation (month, day, year)
- Installed capacity

We then asked respondents to indicate, from a list of possible options, what other static information about the generator that the system should track. **Figure 6** summarizes responses from all respondents.

Figure 6. Other Static Information Desired



Clearly, the geographic location (or first point of interconnection), as the question was worded, and the status of the generator as existing, baseline, incremental or new are the two bits of data that most respondents believe should be tracked with each certificate. 63% and 60% of respondents supported these options, respectively.

A slight majority (53%) also favored including emissions information in the tracking system, but support for tracking individual pollutants ranged only from 30% to 40%.

Labor characteristics (use of union labor or labor practices) by individual generators received the least support, by 10% of respondents, but are a requirement of the California RPS law.

There were quite a few suggestions, summarized below, for other data that should be tracked.

The most extensive comments were about tracking emissions. One person said WREGIS should track any pollutants that any of the Western States require to be reported on disclosure labels. But another said, “If the system is only tracking renewables I don't think tracking emissions is that important. If the system is tracking ALL types of generation then obviously it should track emissions (so that it can support other types of reporting).”

Yet another stated, "if we are only tracking renewables, the only resource we need to worry about is biomass, which emits not only VOCs and Hg but also Semi-Volatiles and other metals. Given the wide range of fuel sources and resulting emissions I think the easiest way to deal with this would be to ask whether the facility uses 'Best Available Control Technology' and ask for a date of control system installation (later date = better technology).” One respondent thought the system should track “effective CO_2 emissions,” stating that biomass and landfill gas produce no net CO_2 and have significant CO_2 offset benefits. Finally, one person requested that the system track spent nuclear fuel measured in mg/kWh.

Three people commented on facility status. One thought it might be difficult to track this because the definitions of existing, baseline, incremental, or new facility vary by state. Another suggested that this status should be state-specific, for example, if California has designated a facility as "existing" is should be designated as "CA-existing." One respondent suggested some alternative categories or labels for each facility (and the certificates issued to them), such as “SEP-eligible,” “CA RPS-eligible,” “Incremental Geothermal,” and “Repower Date.”

Several others also recommended that the system track RPS eligibility, by state. One respondent was very specific: “[We] need to be able to determine if facility meets the Oregon definition (Oregon Administrative Rule 860-038-005) of Renewable Energy Resource: (52) "Renewable energy resources" means: (a) Electricity-generation facilities fueled by wind, waste, solar or geothermal power or

by low-emission nontoxic biomass based on solid organic fuels from wood, forest and field residues; (b) Dedicated energy crops available on a renewable basis; (c) Landfill gas and digester gas; and (d) Hydroelectric facilities located outside protected areas as defined by federal law in effect on July 23, 1999."

Two responses suggested that the tracking system note whether the facility meets Green-e criteria or eligibility. Although Green-e does not certify facilities, it would be possible to designate facilities that meet Green-e's eligibility standards.

One respondent stated that information on whether a facility receives federal production tax credits should be required.

Another respondent requested that the system track both facility owner and operator, and federal EIA plant identification numbers.

One person commented that the system administrator should check annually for changes or upgrades to generating facilities, and another felt the system should track fuels used in production of generation, particularly if there is a fossil fuel portion or another variable fuel such as used in co-firing biomass.

There is nothing too remarkable in terms of differences among types of respondents, but differences among state respondents reveal that some states have more information requirements than others at this time. Responses by state or provincial policy makers or regulators (since these are presumably more knowledgeable about current or likely state requirements) are shown in **Table 7**. Some state or provincial agencies offered more than one response, and not all such respondents indicated an interest in the same data. **Table 7** identifies any data option that at least one agency or regulatory respondent checked.

Table 7 shows that at least one policy maker or regulators in nine of fourteen state think that some emissions should be tracked. At least one policy maker or regulator in eight of all fourteen states or provinces want to track the status of the generating facility as existing, baseline, new, or incremental and seven of the fourteen states/provinces want to include the location of the generating facility.

Table 7. Static Information Desired to be Tracked by State or Provincial Policy Maker or Regulator

Static information that system should track	ALB*	AZ	BC	CA	CO*	ID	MT	NV	NM	OR	SAS	UT	WA	WY
Union labor or labor practices at the generating facility				X				X						
Whether the generating facility has received any state subsidies			X	X				X				X	X	
Emissions information from the generating facility		X		X			X	X	X	X		X	X	X
NOx (nitrogen oxides)				X			X	X	X	X		X	X	X
SO2 (sulfur dioxide)				X			X	X	X	X		X	X	X
CO (carbon monoxide)				X			X	X		X		X	X	X
CO2 (carbon dioxide)				X			X	X	X	X		X	X	X
Mercury				X			X	X	X	X		X	X	X
PM 10 (particulate matter)				X			X	X		X		X	X	X
VOCs (volatile organic compounds)				X			X	X		X			X	X
Emission allowances received under a cap and trade program				X			X	X		X		X	X	X
Location or first point of connection of the generating facility		X	X	X				X		X		X	X	
Facility status as existing, baseline, incremental or new				X		X	X	X	X	X		X	X	
Information about repowering				X				X	X	X				

* There were no provincial policy maker or regulator responses from Alberta. Colorado's response did not indicate that any additional information should be tracked.

Dynamic Information

We also asked stakeholders about dynamic information needs. We identified dynamic information that is commonly included in renewable certificate tracking systems in the survey introduction:

- Quantity of energy generated (usually denominated in MWh)
- Time and date of generation
- Unique serial number for each certificate issued (one per MWh)
- Initial ownership of certificate (indicated by depositing certificates into accounts as soon as they are issued)

Then we asked respondents for any other dynamic information that the system should track. Overall, 59 of all respondents (65%) thought the system should track information about whether or not the renewable attribute has been disaggregated, but there were several comments on this point. One person emphasized that the system should track only *whether or not* the REC has been disaggregated, and *not* track the individual attributes. Three respondents stated emphatically that RECs should not be disaggregated. “It should be impermissible for generators to disaggregate their renewable attributes. Disaggregation would destroy the integrity of the entire system.” One agreed, saying that generation should only be tracked if it has not been disaggregated, and another added, “To the extent that the system accommodates a 'disaggregated' product, it facilitates one.”

Two respondents said that the system should track whether energy is sold with RECs or whether RECs are sold separately. One of them added, “The system needs to track where the energy was delivered to (whether or not RECs were separated). California has an in-state delivery requirement for out-of-state renewables.”

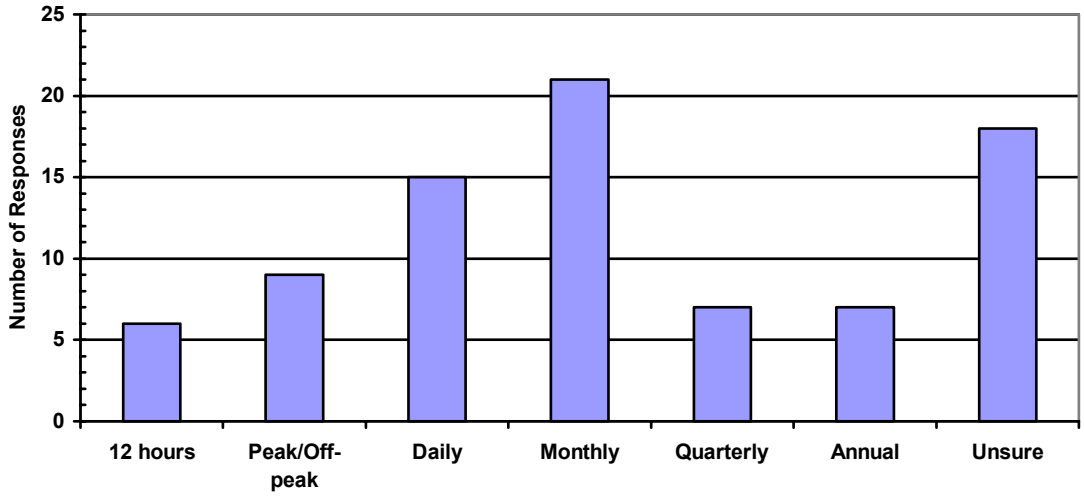
One respondent suggested fields to indicate eligibility with various programs, as the NEPOOL GIS provides. “Each state or other program administrator can determine beforehand if a given facility qualifies under its program, and then the certificates produced by the facility are automatically checked as eligible for compliance with that program. This smoothes out compliance market transactions, because the Buyer can clearly see that the certificates are marked as "Connecticut Class I" or whatever. It could be helpful for the voluntary market as well (certificates could be marked as "Green-e" eligible for example), but it's important that the responsibility/authority for marking the certificates rest in the hands of a program administrator, NOT the generators - otherwise they might incorrectly mark their certificates, which undermines the integrity of the process.”

An environmental trader or broker said, “I strongly disagree with efforts to tie specific quantified emissions reductions benefits to the REC concept. I don't think the quantification can be rigorously supported in a de-regulated energy environment. Furthermore, unless existing laws and practices are revised, ascribing indirect emissions reductions that may occur due to incremental renewable generation to the renewable generator will lead to a double counting problem. An existing fossil generator calculating against a baseline could also show, and potentially sell, an emissions reduction.”

Generation Tracking Intervals

On the theory that the time of generation might be important to some stakeholders to determine environmental value, we also asked respondents, “How precisely does the system need to track the date and time of generation?” **Figure 7** summarizes the responses.

Figure 7. Generation Tracking Time Period



The most frequently cited generation tracking period was monthly, supported by 23% of respondents. Perhaps more important is the proportion of respondents (20%) that indicated "unsure or don't have an opinion." This may reflect a lack of understanding of the question, the technical needs of the system or simply a poorly worded question.

Several respondents thought the tracking period would depend on state or federal reporting requirements. One suggested 15-minute increments "to accommodate any possible reporting requirements," and another suggested collecting hourly data that could be aggregated into monthly reports.

Two comments linked the answer to emissions regulations: "If renewables participate in NO_x markets, monthly or even daily reporting might be necessary," and "It depends on the claims made regarding emissions offsets."

6. DATA SOURCES FOR THE TRACKING SYSTEM

Data for tracking systems generally comes from two sources: the generators themselves (verified by the states or some independent entity), and from the transmission system operator that must track which generators are running when and how much electricity is produced. In New England, for example, the individual states are responsible for collecting and verifying static information about generators. Generators themselves report much of this information to the federal Energy Information Administration, but there is still data that must be verified.

The questions did not ask specifically which data are already collected, only whether their state collects any of the static information about generators listed previously in **Table 7**. By identifying the state agency responsible for this task, WREGIS planners can follow-up with those states for more detailed information.

What is most notable in these responses is that most respondents (75%) are unsure of whether collected data is verified, and of those that said it is verified, most did or could not describe how it is verified. This may not be too surprising given that most of the respondents are not responsible for collecting and verifying data, but even among state agency respondents, there is considerable uncertainty, suggesting that work will have to be done here.

State agencies may have some of the information already. Occasional field visits may be necessary to verify certain information. For example, co-firing of some renewables at coal plants can vary considerably over time, and some biomass feedstocks may be eligible only if they meet qualifying criteria. There should be some standard data collection and verification protocol so that all information that is entered into the tracking system meets minimum standards. The WREGIS Operational Rules Committee will develop these standards.[6]

As to dynamic information based on actual generation, the NEPOOL Generation Information System relies on ISO New England, and the Texas REC program relies on ERCOT. Both ISO New England and ERCOT are the grid operators responsible for generator dispatch and run data. In the Western Interconnection, however, there is no single transmission operator, so WREGIS will have to obtain data from several different sources.

It is important that generation data come from the most accurate, verified and secure sources possible. This is generally settlement data used to make payments by the system operators to generators. Settlement data are also desirable because they already take into account line losses. Guidelines will have to be developed to guide the selection of settlement data sources for use in the WREGIS system. This will require further discussion and recommendations from the Operational Rules

[6] This and other envisioned committees, and their proposed responsibilities, are described in Section 9, Next Steps.

Committee. The current status of data collected on generators is summarized in **Table 8**.

Table 8. Status of Data Collection on Generators

State	Already collecting some generator information	State agency responsible	Is information verified?			If verified, how
	# stating Yes of # of respondents		No	Unsure or DK	Yes	
ALB	0 of 1			X		
AZ	1 of 4	ACC			X	Limited—not specified
BC	2 of 4	BC Hydro, BC Utilities Commission, Ministry of Water, Air and Land Protection, Comptroller of Water Rights, Statistics Canada			X	Not specified
CA	15 of 26	CEC, CPUC, ISO, Air Resources Bd, local APCD, Climate Registry, USEPA		Most are unsure		Major air sources use CEM. ISO data is metered. CEC uses spot checks subject to penalties.
CO	0 of 9					
ID	0 of 1					
MT	1 of 4	Dept of Environ. Quality	X			
NV	1 of 2	PUCN				
NM	1 of 2	NM Environment Dept, Air Quality Bureau; NMPRC		X		
OR	4 of 10	EFSC, DEQ, Office of Energy		X		
SASK	0 of 1					
UT	1 of 3	--		X		
WA	1 of 6	CTED-Energy Policy			X	Compiled on all generating facilities in the WECC that report to the federal government, and a few more. Emissions data, by plant, from EPA's E-grid. These two sources provide data on output, emissions, plant contacts, multiple fuel use, and location of plant by state and WECC sub region. Also a web-based reporting system that collects resource claim data from all WA utilities and two IOUs in Oregon. System could be modified to serve more retail suppliers or states.
WY	0 of 3			X		

7. REGULATORY NEEDS FOR TRACKING SYSTEM

A REC tracking system's purpose is solely to support public policies and facilitate fluid and credible markets. Some tracking systems, like that of Wisconsin, are intended primarily to support a state RPS, while others, such as New England's, are intended to support a variety of policies and market activities.

To determine the policy needs of the Western Interconnection, we asked state and provincial policy makers and regulators to evaluate the status in their states of four specific policies: renewable portfolio standards, emissions cap-and-trade programs, environmental disclosure or electricity labeling, and voluntary greenhouse gas registries. At least one representative responded from each state or province. In some cases we received conflicting answers from representatives within a state. We show all responses in **Table 9**, since this survey question was soliciting the opinion of state regulators, and does not necessarily represent a statement of fact.

Five states or provinces currently have adopted RPS legislation or rules. Four states or provinces indicate some interest or discussion, and three states say there is not serious interest at this time. Although not uniformly adopted throughout the West, RPS may be one of the most important drivers for the development of a REC tracking system.

On the topic of cap and trade programs, about one half of the states and provinces responded that there is no serious interest at this time. There is some interest shown in responses from eight states and provinces. These programs currently do not appear to be a driver for a tracking system.

Three states or provinces have a greenhouse gas registry in place, California, British Columbia and Saskatchewan. For the most part, US states have either some interest or no serious interest at this time, so this is not likely to be a major driver in the development of a REC tracking system.

We also gave states an opportunity to describe any other public policies that would benefit from a REC tracking system. State or provincial policy makers or regulators identified the following policies or programs:

> California: "Please note that…the emissions cap-and-trade programs are local programs for specific emissions."
>
> New Mexico: "NM has a state-level Renewable Energy Production Tax Credit in place; tracking system could be used for cross-verification purposes. Similarly, a green pricing program is being implemented here."
>
> Oregon: "1) The green power options the utilities offer. 2) Public purpose fund expenditures (on renewable resources) by the Energy Trust of Oregon on behalf of customers of Portland General Electric and PacifiCorp, as well as their self-

directing large customers that can use their renewables portion of the charge to invest in green power or tags for their own facilities. 3) Other tag sales (e.g., by the Bonneville Environmental Foundation), particularly for customers of other utilities."

Saskatchewan: "The Saskatchewan Power Corporation (provincially owned utility) has several renewable power procurement programs that might benefit from a tracking system: Wind Power Procurement (150 MW); and an Environmentally Preferred Power Procurement(45MW) Program. Canadian governments (federal and provincial) are discussing national tracking systems as part of measures for achieving compliance with national Kyoto Protocol emission reduction targets."

Utah: "Regional Haze Air Quality Plan (State Implementation Plan or SIP)."

Arizona: "The Regional Haze State Implementation Plan 10/20 Renewable Resource Goal."

Table 9. Status of Policies, by State

States	Legislation or rules in place	Seriously considering policy now	Some interest or discussion	No serious interest at this time
Arizona	RPS, Disclosure	Cap and trade	GHG registry	
British Columbia	RPS, GHG Registry		Cap and trade	
California	RPS, Disclosure, GHG Registry, Sub-State NOx Cap and Trade	Cap and Trade		
Colorado	Disclosure			
Idaho			RPS	Cap and Trade, Disclosure, GHG Registry
Montana			RPS, Disclosure	Cap and Trade, GHG Registry
Nevada	RPS		GHG Registry, Disclosure, Cap and Trade	GHG Registry
New Mexico	RPS, Disclosure	Cap and Trade	GHG Registry	Cap and Trade, Disclosure, GHG Registry
Oregon	Disclosure		Disclosure, Cap and Trade, RPS, GHG Registry	GHG Registry
Saskatchewan	GHG Registry		Disclosure, Cap and Trade, RPS	
Utah		RPS, Cap and Trade	Disclosure, RPS	Cap and Trade, GHG Registry
Washington	Disclosure		RPS, GHG Registry	RPS, Cap and Trade
Wyoming			Disclosure	Cap and Trade, Disclosure, GHG Registry

*To develop this information in more detail, we ask state officials to review and comment as to the accuracy of **Table 9** for your state.*

When asked whether their state or province has or plans to develop a tracking system to support any of these public policies, 29% of all respondents answered yes, 29% answered no, and 42% were not sure. From the state agency respondents alone, it appears that Arizona, California, Nevada, Saskatchewan, and perhaps Washington believe they do, although California, Nevada and Washington also said "don't know." British Columbia, Idaho, Oregon and Wyoming answered an unqualified "no," while New Mexico and Utah said both "no" or "don't know." Colorado and Montana are firmly in the "don't know" camp.

Specific RPS Issues

For those states and provinces with an RPS (Arizona, British Columbia, California, Nevada, New Mexico), we asked if they have any special requirements that a tracking system should try to accommodate. Specifically, we asked, "In order to be counted towards complying with your state RPS, is there a requirement that electrical energy generated from renewable facilities must be sold with the environmental attributes (bundled)?" Only California said yes, but stated that final rules are still under development. An Arizona stakeholder answered yes, and explained that this is demonstrated simply by not unbundling.

We also asked, "In order to be counted towards complying with your state RPS, does electricity generated from renewable facilities need to be generated and/or delivered in-state?" Arizona, California, Nevada and New Mexico said yes.

Arizona simply referenced Arizona Rule: R-14-2-1618. Another Arizona stakeholder said, "Non solar renewable must be generated in state. Solar generation can be out of state, but there are strong incentives to effectively keep it in state."

California again explained that their rules are still under development. A non-governmental California stakeholder observed that the RPS was "established with in-state resource requirement but legislation is being amended to include out of state resources," and another stakeholder also offered the perspective that this is still under consideration.

Nevada explained that it "must be delivered in state from a facility that is directly interconnected to the state's transmission systems."

New Mexico stated that "NMPRC Rule 17.9.573 NMAC requires each public utility to develop an energy portfolio appropriate to its suppliers and customers. The portfolio shall be diversified as to type of renewable resource with preference give [sic] to renewable energy generated in New Mexico."

Finally, we asked, “Are there any other special requirements in your state’s RPS program that should be tracked by the tracking system?”

An Arizona stakeholder answered, “In addition to source, the ultimate user/retiree of the credits should be tracked,” but it is not clear if this is a requirement or the respondent’s opinion.

A California stakeholder noted that verifying scheduled energy to load may become a requirement if RPS deliveries ultimately are required to be bundled.

A Colorado stakeholder, describing the New Mexico RPS, noted that a weighted credit scheme was adopted, in which “1 kWh of wind = 1 kWh of credit; 1 kWh of geothermal or certain biomass = 2 kWh credit; and 1 kWh solar = 3 kWh credit.” Nevada also has a similar kind of credit multipliers.

For these special RPS needs, a Special Issues Committee will study how to implement them in the tracking system, and recommend an optimal solution.

Public Goods Charge Issues

Respondents were asked if there is a Public Goods Charge. A Public Goods Charge is a surcharge or levy on electricity sales or perhaps on emissions that creates a dedicated fund that is used for renewable energy, energy efficiency, R&D or low-income programs. In some states it is referred to as a Public Benefits Charge, System Benefits Charge or Public Benefits Fund.

Both California and Oregon said they have a Public Goods Charge. An Arizona stakeholder also claims that Arizona does as well, but this was not confirmed by Arizona governmental respondents.

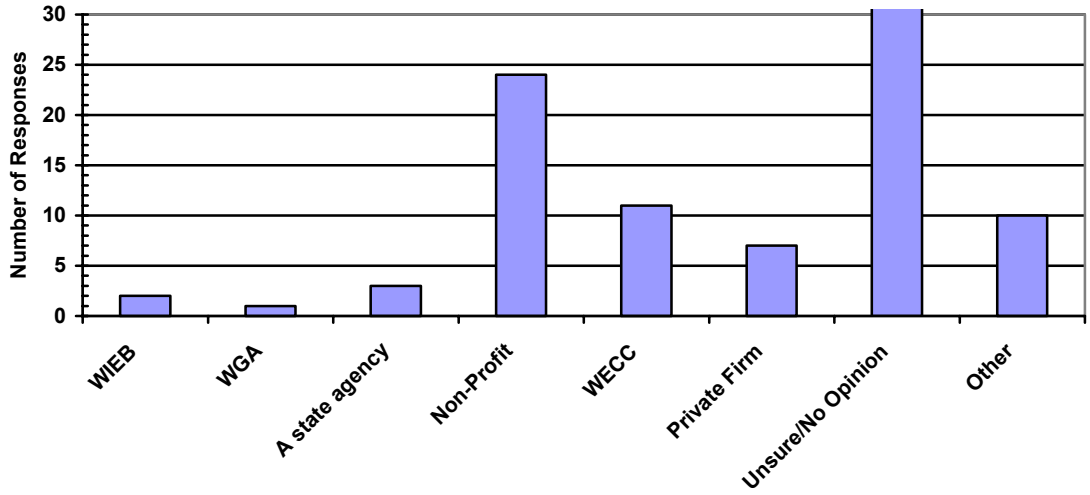
Those with a Public Goods Charge were asked if there is “any information related to the use or receipt of public funds for renewable energy generation or use that should be tracked.” A California policy maker answered yes and explained that “rules are being developed to protect against double dipping of PGC funds.”

Finally, we asked, “Does your state fund place any restrictions on the use of renewable energy certificates from generators that receive PGC funding?” California officials were unsure, and Oregon policy maker said yes, while a regulator from the same state was unsure.

8. INSTITUTIONAL AND PLANNING ISSUES

The issue of where to institutionally house WREGIS is an important decision, particularly considering the size of the region, the international scope of the market and the fact that there are multiple system operators and RTOs. This question was posed to stakeholders as a multiple choice question with possible answers including the Western Interstate Energy Board, the Western Governors' Association, a state agency (which state or agency not specified), a government-sanctioned, independent non-profit formed specifically for this purpose (on the chart as simply "non-profit"), the Western Electricity Coordinating Council, or a private firm (again unspecified), "other" and, "unsure or don't have an opinion." This question was posed to solicit an initial opinion on the subject. Of the options given, the most common response was "unsure or don't have an opinion," followed by a non-profit and the Western Electricity Coordinating Council. These results are shown in **Figure 8**.

Figure 8. Preferred Organizational Home for WREGIS



There were several "other" suggestions. One respondent recommended using Green-e to avoid duplication, and three people said the RTO(s) should have this responsibility. Most "other" comments reinforced one or more of the options already given, mentioning either WECC, WEIB or "any of the three regional entities cited." One respondent offered, "An entity with the technical computing capability to administer the system, and the funding mechanism to ensure permanence of function over time," and another said, "Any credible, competent, affordable organization that is willing to have an oversight committee establishing policy and overseeing implementation." Three respondents suggested that any of the options should encompass the possibility of a private firm contracted to administer the system, under the oversight of a regional body or board of public agencies or regulators.

This information will be used by a WREGIS Institutional Committee to make final recommendations about what entity should administer the system. Neither responses by state nor by type of respondent revealed any different insights than what is shown in the overall summary in **Figure 8**.

Critical Dates for Tracking System Development

For planning purposes, we asked if there are any critical deadlines or other dates that should be factored into system planning and start-up.

Comments specific to California indicate that a tracking system should be operational by the end of 2004 to facilitate RPS compliance, recognizing that the first true procurement under the RPS law may take place in 2004.

A Utah respondent also stated that a tracking system should be in place by 2005 or sooner. “This will be helpful in assessing progress for renewable energy for regional haze air quality plans that must be submitted to EPA by 2007.”

At least two other respondents were focused on regional haze. A federal agency respondent stated that State Implementation Plans for visibility protection are due in 2007, but another added that this is unlikely to trigger a market until 2008 or beyond.

New Mexico respondents stated that the first “hard deadline” for that state’s RPS is January 1, 2006, but PRC rules require each public utility to file with the Commission its proposed power supply portfolio by October 1, 2004, and a report on its power supply for the previous calendar year by July 1, 2004.

A regulator commented, “We need the system now to make certification credible and to enhance the credibility of Oregon's renewable resource options for Portland General Electric and PacifiCorp customers.”

An investor-owned utility, perhaps thinking that US policy will change in the next few years, noted that the first compliance period in the Kyoto Protocol begins January 1, 2008.

A British Columbia respondent stated that the development of a tracking and accounting system is “key to our RPS and our pilot REC program. I would have to respond with it being an ASAP timeframe.”

In fact, at least 10 respondents issued a plea for as soon as possible or the sooner the better. One renewable energy or REC marketers noted, “the sooner the tracking system is operating, the sooner the credibility of RECs is raised.” Another added, “The retail energy market needs systems like this to bring greater value and choice

to end-use consumers. Currently the reporting and agency over-lap (or under-lap) creates too much confusion and frustration."

But not everyone agreed with the urgency. One renewable generator said, "I would rather wait a little longer and have the RECs be tradable between different regions of the U.S. and internationally." Another renewable generator opined, "Unless all generation (fossil, large hydro and nuclear) is included in this program, this effort will be largely a waste of time and money. Otherwise you can build a REC trading system like Wisconsin or Texas. Unless you build something like the NEPOOL GIS, save yourself and ourselves by not proceeding with this effort."

Special Concerns about Tracking System Development

We also provided an opportunity for respondents to indicate any special concerns about the development of WREGIS. There were many thoughtful comments, some of them reinforcing earlier written comments or expanding on opinions covered by earlier questions. These are de-emphasized here to control repetition. A number of comments, such as opinions about eligibility of different energy resources, are more directed to public policy than to a tracking system. We have generally omitted these, as WREGIS intends to leave policy-making to the states.

Here we present comments that illustrate a variety of points of view, sometimes singly, sometimes in concert with a few others. We also include comments provided in response to earlier questions, but that did not fit the question. Our selection is provided for insight, not to indicate a preponderance of opinion.

Investor owned utility: "It is important that the West does not treat tags separately in a vacuum from the rest of the US. For example, tags generated in neighboring states to the West could provide significant benefit to the Western region and should not be ignored."

Renewable energy generator/developer: "This effort is largely an effort of out-of-state wind developers who want to participate in RPS efforts in those states where they can or will not build their facilities. This effort will largely be used by these entities to destroy the local benefits of renewable energy…"

Investor owned utility: "The governing board of the tracking group must also have fair representation from all parties, including all states and all renewable generation classes."

Investor owned utility: "(1) No serial numbers for 1-MWh increments - burdensome with minimal usefulness in the market. (2) No need to track transactions - this goes over the foundational role of the tracking system to more applied activities."

Renewable energy or REC marketer: “Our firm is involved in aggregating small scale generators to assist them in participating in REC markets. Would like to ensure that the system supports a structure where an aggregator issues certificates which represent more than one generator. In the case of many small-scale installations, it takes more than a quarter to generate a single MWh, so aggregation is essential.”

Other: “I am concerned that the small PV systems will get cut out of process because they are small kWh transactions. For CA, DG is the only place where customer choice is still an option. It is very important to give utility customers options for ultra-clean generation and for them to receive credit for this investment.”

Other: “Regarding distributed generation: I'd recommend requiring the use of a utility-grade meter as a prerequisite to selling RECs into the market. That way the output can be verified and is auditable.”

Renewable energy or REC marketer: “We believe the system will be useful for tracking and verification purposes only. It should not interfere with the trading relationship between consumers, marketers and producers. Transactions, terms and trades should occur completely independent of the system, with only the final verification of the trade being recorded.”

Other: “The system should issue certificates and record their transfer only. The system should be based on the model of the U.S. Acid Rain program, where allowance allocation, ownership and transfer are recorded. The system should not attempt to provide any services beyond registration. It should not act as a broker, clearinghouse or settlement agent. Those services will be provided at greater efficiency by the private sector.”

Renewable energy or REC marketer: “It is essential that we do not create another system for tracking retail sales. Green Tag marketers buy wholesale, and sell retail. It is appropriate for the state to track the wholesale transactions. It is inappropriate for the state to track retail transactions that contain customer-specific information. Green-e does a fine job of auditing the retail/voluntary market. If retail transactions must be submitted to the state, we may choose not to participate. The administrative costs will likely make it non-cost-effective.”

Renewable generator or developer: “Advanced education needs to focus on the fact that unbundled is as good as, if not better than, bundled.”

State or provincial policy maker: “Be sure to get FERC, EPA concurrence before spending significant money or locking in design decisions.”

State or provincial policy maker: “That it be affordable. I would compromise on some deliverables in order to ensure that the system is affordable and accurate enough. Don't gold plate this - particularly if renewable retailers are going to incorporate the cost of this into their system. Don't permit the separation of environmental attributes

or emission credits from the renewable energy credit. This is extremely important to us. It is an either-or situation. Either a renewable generator could claim one highly valued emission or the entire renewable energy credit should be deemed to be worth: ____ lbs of SO_2 ____ lbs of CO_2 ..."

State or provincial regulator: "I'm concerned about incurring costs and committing to a system that benefits other states and/or other regions with no direct benefit to ratepayers in Colorado."

Public interest or environmental organization: "Making sure that there is not double counting is a very important role that this system should play. Along these lines, if power or RECs are sold for green or renewable power claims, then no emissions offsets should be sold for the same power. Green power customers assume that they are getting all the environmental benefits from this power generation. If emissions offsets are to be sold, they may be sold separately, but no green power should be sold from that same generation."

Environmental trader or brokerage: "A big issue is always the lifespan of certificates. This topic can get very complicated, and there's too much to go into it here! But at a minimum, the system should provide the ability to bank certificates (whether or not states wish to allow banked certificates for compliance is a completely separate issue)."

Other: "The current practice of rolling over RECs from one year to the next is tracking nightmare. In addition it dilutes the market and confuses the consumer. I've seen marketers spin the current Green-E 18 month tag criteria....Very misleading ad copy and press releases which do not reflect their actual purchase ....not good."

State or provincial policy maker: "We in Washington would really appreciate a system that operates on a calendar year."

State or provincial policy maker: "Data must be reported at least monthly and must be verified for the previous year by April. Otherwise the info will be useless for WA and OR disclosure labels that cannot be updated or revised."

Public interest or environmental organization: "…utilities have different reporting requirements for renewables in their system mix, versus those that they use to supply their optional green power programs. Utilities generally have to report resources in their system mix on a calendar year basis, however the true-up period for optional programs is between 18 months and 2 years."

Municipal or other customer owned utility: "Making sure that it has: - credibility. Without this nobody will subscribe to it. - functionality. Can it truly be all things to all people? - technical integrity. Will it work across all stakeholder platforms and will it provide the required information and output? - acceptability (by all stakeholders—Government, regulatory, utility, power supplier/developer, and most importantly, the

customer) - flexibility. This is an emerging market and whatever is put in place today will almost certainly need to evolve with the passage of time."

Requiring Market Participants to Use the System

Obviously, a certificate tracking system's usefulness is proven by its use, and use can be voluntary or mandatory. We asked, "Once the tracking system is operational, do you think your state would require market participants to use the system?" This was intended as an opinion question, not a definitive answer. Answers did not reference specific states, and all stakeholders, not just by state agency representatives, answered this question. Nevertheless, we can associate answers with the state where the respondent is located. These are summarized in **Table 10**.

Of those that think their state will require market participants to use the system (i.e., those that answered "yes," we asked for what purpose would market participants be required to use the systems. These answers are also shown in **Table 10**.

Table 10. Mandated Use of Tracking System

States	No	Unsure / DK	Yes	If yes, for what purpose would market participants be required to use the system?
Alberta		1	1	Green marketing claims, bundled renewable electricity deliveries, disclosure labels
Arizona	1	2	1	RPS, green marketing claims, bundled renewable electricity deliveries, disclosure labels
British Columbia		4		
California	2	12	12	RPS, green marketing claims, bundled renewable electricity deliveries, disclosure labels, other
Colorado		8		Green marketing claims, bundled renewable electricity deliveries, disclosure labels, other
Idaho		1		
Montana		1	2	Green marketing claims, bundled renewable electricity deliveries, disclosure labels
Nevada			2	RPS, green marketing claims, bundled renewable electricity deliveries, disclosure labels
New Mexico		2	1	RPS, green marketing claims, disclosure labels
Oregon		5	5	RPS, green marketing claims, bundled renewable electricity deliveries, disclosure labels, other
Saskatchewan		1		
Utah			3	RPS, green marketing claims, bundled renewable electricity deliveries
Washington	1	2	2	RPS, green marketing claims, bundled renewable electricity deliveries, disclosure labels, other
Wyoming		1	1	Green marketing claims, bundled renewable electricity deliveries

APPENDIX A: SURVEY INSTRUMENT

WREGIS Needs Assessment Survey

Your Organization

*Name

*Organization

*Telephone

*(2) How would you characterize the organization you represent or the sector with which you are most closely aligned [Pick one]:

Investor-owned utility
Municipal utility or other customer-owned retail utility
Renewable energy or REC marketer or wholesale trader
Renewable generator or developer
Non-renewable generator or developer
State or Provincial policy maker
State or Provincial regulator
Public interest organization or environmental organization
Environmental trading or brokerage
Tribal organization
Other [fill in the blank]

General Questions About System Functionality

*(3) What are the primary functions that a Western renewable energy tracking system should be able to perform? [Pick up to six responses]

Issue certificates with a unique serial number for every MWh of renewable generation
Verify quantity of MWhs generated
Track renewable transactions at the wholesale level
Track renewable transactions for large institutional retail customers
Verify compliance with state RPS
Verify retail green product claims
Verify information on environmental disclosure labels
Produce environmental disclosure labels for utilities and other retail sellers
Prevent double counting or double selling of renewable certificates
Record renewable certificate imports to and exports from the Western Interconnection

Record or verify bundled renewable electricity deliveries (where the energy and attributes are not separated)
Calculate emissions displacement from renewable energy generation
Create reports about renewable certificates transacted for regulators and other users
Unsure/Don't have an opinion
Verify other state regulatory program ore other function [please specify]

*(4) If the system were capable of performing the functions you have checked above, how would you use the tracking system? [check all that apply]

To verify that generation from a specific renewable generation unit or facility has occurred
To verify renewable certificate transactions in the Western Interconnection
To track renewable certificate transactions between the Western Interconnection and other tracking systems
To prevent double counting, double selling of renewable certificates
To verify or show compliance with state RPS
To verify or show that the information on state environmental disclosure labels are correct
To produce the numbers to put on an environmental disclosure label
I wouldn't use the system
Unsure, don't know if I would use it or not
Other

Specific Questions About System Functionality

*Assuming a positive answer to the questions does not significantly increase costs, please answer the following questions using a 4-point scale, where 1 = not important and 4 = very important

	1 - not important	2 - somewhat important	3 - important	4 - very important	Unsure/Don't know
(5) How important is it to accurately track and account for renewable energy generation in the Western Interconnection?					
(6) How important is it for a certificate-based renewable energy tracking and accounting system to be designed to accommodate commercial trading of renewable certificates?					

(7) How important is it to design the system to incorporate emissions information from specific generating units?

(8) How important is it to design the system to accommodate small, on-grid, on-site generators (e.g., data about photovoltaic and small wind generators located on the customer side of the meter)?

(9) How important is it to design the system to accommodate off-grid generators (e.g. remote generation)?

(10) How important is it to design the system to accommodate renewable energy technologies that do not generate electricity (e.g., solar domestic water heating)?

(11) How important is it to design the system to exchange information with other generation certificate tracking systems in the country?

(12) How important is it to design the system to exchange information with other generation certificate tracking systems outside the U.S.?

Type of Information the System Should Track

Generation tracking systems typically track static information that only needs to be reported once (and in some cases, updated annually), and dynamic information that may be constantly variable.

The following is a list of static information about the renewable energy generator that is commonly tracked in renewable certificate tracking systems:

- Company contact information
- Physical location of the generator
- Generator ID number(s)
- Fuel or Energy Source
- Technology Type
- First date of generator operation (month, day, year)
- Installed Capacity

*(13) Is there any other static information about the generator that you think the system should track? (check all that apply)

Information about the use of union labor or labor practices at the facility
Whether the facility has received any state subsidies
Emissions Information from the facility
- NOx
- SO2
- CO
- CO2
- Mercury
- PM 10
- VOCs

Whether the facility receives emissions allowances under a state, federal or regional cap and trade program
Geographic location or first point of interconnect of the facility
Status of the facility as existing, baseline, incremental or new (or any other similar designation needed to determine regulatory eligibility that is not readily apparent from the static information collected)
Specific information about repowering
Other [please specify]

*(14) Does your state already collect any of the generator information above (e.g. through a state generator registry or state generator certification program)

Yes
No (skip to question 17)
Unsure/Don’t know

(15) Which state agency is responsible for collecting generator information?

[enter text]

(16) Is this information verified, and if so, how?

No
Unsure/Don't know
Yes [please specify]

The following is a list of dynamic information about the renewable generation that is commonly included in renewable certificate tracking systems:

- Quantity of energy generated (denominated in MWh)
- Time and date of generation
- Unique serial number for each RE certificate issued (one per MWh)
- Ownership of certificate (indicated by depositing certificates into accounts)

*(17) Is there any other dynamic information about the generation that you think the system should track? (Check all that apply)

Information about whether or not the renewable attribute has been disaggregated (one or more emissions benefits has been sold to another party)
No other dynamic information needs to be collected/Unsure
Other

*(18) How precisely does the system need to track the date and time of generation? (Check only one)

12 hour increment
Peak or off peak
Daily
Monthly
Quarterly
Annual
Unsure/Don't have an opinion
Other. Please explain why your option would be needed.

*(19) What organization should be responsible for administering the system? (check one only)

Western Interstate Energy Board
Western Governors' Association
A state agency
Government sanctioned, independent non-profit formed specifically for this purpose
Western Electricity Coordinating Council
Private firm

Unsure/Don't have an opinion
Other

(20) Are there any critical deadlines or other dates that we should know about when planning and developing the tracking system? For example, is there a specific date when you would want the system to be up and running in order to fulfill a special need or function?

[enter text]

(21) Are there any special concerns that you have regarding the development of a Western renewable tracking system of which we should be aware?

[enter text]

*(22) Once the tracking system is operational, do you think your state would require market participants to use the system?

Yes
No
Unsure/Don't know

(23) If yes, for what purpose would market participants be required to use the system? (check all that apply)

Verify compliance with the RPS
Verify green marketing claims
Verify bundled renewable electricity deliveries
Produce environmental disclosure labels
Other (please specify)

Institutional and Planning Issues Questions

The remaining questions are primarily geared towards regulators, though anyone may fill them out. If you would like to skip to the final section of the survey please answer no to the following question and click the next button at the bottom of the page.

*Would you like to answer the questions in this section?

Yes
No

(24) for the following questions, please tell us what state you are referring to: [Fill in one state name only]

[enter text]

Please indicate the status of the following policies in your state:

	State legislation or rules in place	Seriously considering policy now	Some interest or discussion	No serious interest at this time
(25) Renewable portfolio standard				
(26) Emissions cap-and-trade program				
(27) Environmental disclosure (electricity labeling)				
(28) Voluntary greenhouse gas registry				

(29) Is there any other public policy (existing or under consideration) that would benefit from a tracking system for renewable certificates?

[enter text]

(30) Does your state have or plan to develop a tracking system to support of any of the public policies listed in questions #25-28)?

Yes
No
Don't know

Questions for States with an RPS

If you answer "no" or "don't know" to the following question you will automatically be taken to the next section.

*Does your state have an RPS?

Yes
No
Don’t know

(32) In order to be counted towards complying with your state RPS, is there a requirement that electrical energy generated from renewable facilities must be sold with the environmental attributes (bundled)?"

No
Unsure/Don’t know
Yes. Please explain how this must be demonstrated.

(33) In order to be counted towards complying with your state RPS, does electricity generated from renewable facilities need to be generated and/or delivered in-state?

No
Unsure/Don’t know
Yes. Please explain how this must be demonstrated.

(34) Are there any other special requirements in your state's RPS program that should be tracked by the tracking system?

[enter text]

Questions for States with a Public Goods Charge (PGC)

Public Goods Charge (PGC) is also referred to as a Public Benefits Charge, System Benefits Charge of Public Benefits Fund

*(35) Is there a Public Goods Charge in your state?

Yes
No (skip to the next page)
Unsure/Don’t know (skip to the next page)

(36) Is there any information related to the use of receipt of public funds for renewable energy generation or use that should be tracked?

Yes
No (skip to the next page)
Unsure/Don’t know (skip to the next page)

(37) To help us better understand the need, please explain how such information might be used in your state?

[enter text]

(38) Does your state fund place any restrictions on the use of renewable energy certificates from generators that receive PGC funding?

Yes
No
Unsure

Questions Related to Specialized Needs

Net Metering, Small-Scale Generation and Off-Grid Generation

*(39) Are there any specific types of small or non-generating types of renewable energy technologies you want to have tracked by the system?

No
Yes (please specify)

*Does your state have an accepted methodology for collecting the generation data from any of the following:

	Yes	No	Unsure/Don't know
(40) Net-metered systems			
(41) Small-scale systems			
(42) Off-grid systems			

(43) If you answered yes to any of the questions above (questions 40-42), please describe the methodology for collecting and verifying the generation data from these systems.

[enter text]

(44) Who or what agency is responsible for collecting the generation data from net-metered, small scale or off-grid systems?

[enter text]

Final Page

Thank you very much for taking the time to complete the survey.

Based on the responses received from the survey, a short report will be written summarizing the key findings and making recommendations for the initial design of a renewable certificates-based tracking system for the Western Interconnection. In addition, the WGA and the CEC will also be hosting two public workshops to go over the findings in the survey, and to solicit additional opinions from interested parties regarding the design and functional capabilities of such a renewable tracking system. A separate email will be sent out with the dates of the workshops. A final report will be released incorporating the comments received from the public workshops and the surveys.

APPENDIX B: LIST OF ORGANIZATIONS THAT WERE SURVEYED

Pacific Gas and Electric	Oregon Dept. of Environmental Quality
SCE	Oregon Energy Office
SDG&E/Sempra	Oregon Public Utility Commission
California Municipal Utilities Assoc.	Utah Div. Of Air Quality
LADWP	Utah Division of Public Utilities
Northern California Power Agency	Washington Dept Community, Trade and Economic Development
Palo Alto	Washington Energy Division
Pasadena Water & Power	Washington UTC
SMUD	Wyoming DEQ
So. CA Public Power Authority(SCPPA)	Wyoming Office of Consumer Advocate
CA Integrated Waste Mgmt. Board	Wyoming Office of the Governor
CA Independent System Operator (ISO)	Wyoming Public Service Commission
Ca Farm Bureau Federation	Arizona Electric Power Co-op, Inc.
CA Dept. of Water Resources	Basin Electric Power Cooperative
CPUC	Chelan PUD
California Power Authority	Enervision
CA Dept. of General Services	Eugene Water and Electric Board (EWEB)
Alberta Energy, Gas, Utility Devlpmt	Grant County PUD
Arizona Corporation Commission	Last Mile Electric Coop
AZ Department of Environmental Quality	Lower Valley Energy
Arizona Energy Office	OPUDA
Arizona Governor's Office	OR Munis
British Columbia Ministry of Energy & Mines	ORECA
British Columbia Utilities Commission	Snohomish PUD
Colorado Air Quality Control Commission	Tacoma Power
Colorado Public Utilities Commission	Arizona Power Authority
Energy Trust of Oregon	Arizona Public Service Co.
Government of Saskatchewan	BC Hydro
Idaho DEQ	PacifiCorp
Idaho Public Utilities Commission	Portland General Electric
Environment Canada	Public Service Company of New Mexico
Montana Consumer Council	Puget Sound Energy
Montana PSC	Salt River Project
Nevada Office of Consumer Advocate	Seattle City Light
Nevada Office of the Governor	Sierra Pacific Power Company
Nevada Public Utilities Commission	Tucson Electric Power

3 Phases Energy Services	Aquila Energy
Alliance for Retail Energy Markets	Big Green Energy
APX, Inc.	Community Energy
Bonneville Environmental Foundation	Mainstay Energy
Commonwealth Energy Corporation	Renewable Choice Energy
Constellation New Energy	Sterling Planet
Coral Power LLC	Vision Quest
Duke Energy	Powerex
Dynegy	Producer Services Consulting Inc.
EasEnergy	Cantor Fitzgerald Environmental Brokerage Services
Enron Energy Services	Emissions Marketing Association
Global Renewable Energy Partners Inc	Natsource LLC
Green Mountain Energy Company	Evolution Markets
PG & E National Energy Group	Reliant Energy
Pacificorp Power Marketing	AstroPower
American Wind Energy Association	Bergey Windpower
BC Hydro	BP Solar
Biomass Energy Alliance	GE Wind Energy
CA Wind Energy Assoc.	Power Light Corp.
CAL SEIA	RES Energy
CalEnergy	RWE SCHOTT Solar Inc.
CALPINE CORP	Sharp
Florida Power and Light	Shell WindEnergy Inc.
Independent Energy Producers	Xcel Energy
PG&E NEG	TransAlta
Ridgewood Power	Clean Power Markets
Vulcan Power Company	West Connect
Wheelebrator	WECC
Intertribal Council on Utility Policy	RTO West
NTEC	SSGWI
Navopache Electric Cooperative	National Park Service
Nez Perce Tribe	National Renewable Energy Laboratory
Environment California (Energy Div of CalPIRG)	Pima County Department of Environmental Quality
Clean Air Now	Bonneville Power Administration
CEERT	WAPA
Environmental Defense Fund	Community Office for Resource Efficiency
Green Power Institute	Western Resources Advocates
Northwest Energy Coalition	World Resources Institute
NRDC	CRS- Green-e Program
Renewable Energy & International Law Project	UCAN
Renewable NW Project	Union of Concerned Scientists

Sierra Club
The Climate Trust
TURN